EA Engineering, Science, and Technology

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2 April 1999
EA Project No. 296.0043.7296

Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, MS #82
Lester, Pennsylvania 19113-2090

Attn: Mr. Ed Boyle
Remedial Project Manager

Re: Contract No. N62472-92-D-1296; CTO No. 0043
Summary Report for October 1998 Quarterly Ground-Water Sampling Event at Naval Air Warfare Center (NAWC) Trenton (Ewing Township), New Jersey

Dear Mr. Boyle:

The purpose of this report is to provide the Navy with the results from laboratory analyses of ground-water samples collected from 55 monitoring wells (51 onsite and 4 offsite) and 8 storm drains (4 onsite and 4 offsite) located at Naval Air Warfare Center (NAWC) Trenton. These samples were collected by EA Engineering, Science, and Technology (EA) between 5 October and 16 October 1998 in accordance with the Draft First Year Monitoring Plan (EA 1998). This letter and the attached tables and figures comprise the subject report.

The analytical results for the October 1998 sampling event are summarized in Tables 1 through 5. On each table, the samples are listed in numerical order, beginning with bedrock wells, followed by overburden wells. New Jersey Department of Environmental Protection (NJDEP) Ground-Water Quality Criteria for Class II-A Ground Water (N.J.A.C. 7:9-6) are also included on the tables for comparison with the analytical results. The criteria used (unless otherwise noted) are the Higher of Practical Quantitation Levels (PQLs) and Ground-Water Quality Criteria. Concentrations of analytes that are greater than NJDEP ground-water criteria are highlighted in bold on the tables. Analytical results for field blank and trip blank samples are listed at the end of each table (trip blanks are only listed on Tables 1A and 1B, as they were only analyzed for volatile organics). Data qualifiers, acronyms, and other notes referenced on the individual analytical summary tables are listed and defined in Table 6. Monitoring well locations are provided on Figure 1 and storm drain locations are provided on Figure 2. Field Record of Well Gauging, Purging, and Sampling forms for each well are also attached as Appendix A.

Additional considerations regarding this report include the following:

- As directed by the Navy on 9 June 1998, the scope of this quarterly report was reduced from a full ground-water sampling report (which typically includes ground-water elevation maps and an interpretation of analytical results) to a submittal of only analytical data summary tables. Ground-water elevation maps and isoconcentration maps will be developed by the USGS using the October 1998 sampling data and submitted to the Navy under separate cover. Additional figures (as needed) and interpretation of results will be incorporated into a yearly report following the fourth quarter sampling event.
- No sample was collected from monitoring well 2S, because the well has been abandoned.
- No sample was collected from monitoring well 41S because there was no water present at the time of collection.
- Ground water collected from monitoring well BRP-3 contained unusually high levels of turbidity, possibly due to nearby construction.
- Surface water samples were not collected from three storm drains (ST-21, ST-28, and ST-29), because there was no water present at the time of collection.
- No samples were taken from monitoring wells 24BR and 25BR, because both wells were obstructed. The Navy removed the obstructions subsequent to the October 1998 sampling event.
- Analyses of samples for volatile organic compounds (VOCs) were generally performed on undiluted samples. In some samples, however, analyte concentrations (particularly trichloroethene [TCE], 1,2-dichloroethene [1,2-DCE], and vinyl chloride) exceeded the instrument calibration range during analyses of the undiluted samples. When this occurred, the sample was reanalyzed at a secondary dilution to quantify those analytes that exceeded the calibration range during the undiluted analysis. Both the undiluted and the diluted analytical results are presented on Table 1 for those samples where this applies. Copies of the sample narratives for all sample delivery groups within this round are attached as Appendix B.
- The initial sample analyses (including those samples requiring dilution prior to the first run) were performed within the method holding times except for VOC analyses of samples collected from seven locations (35BR, ST27, ST26, OF25, OF24, OF22 [and OF22 duplicate], and OF23). Initial VOC analyses for these samples were performed one day past holding times due to analytical instrument maintenance. For those samples requiring secondary dilution, holding times were exceeded; however, analyses of the secondary dilution generally confirmed the elevated concentrations reported in the initial analyses. Diluted samples for anions were analyzed within holding times.
- Ground-water samples from twelve of the wells (4BR, 6BR, 8BR, 22BR, 29BR, 31BR, 38BR, 41BR, 43BR, 44BR, 46BR, and 31S) were reanalyzed for VOCs due to surrogate recoveries of bromofluorobenzene that were outside of quality control limits. The reanalyses holding times were exceeded; however, if either the initial analysis or the reanalysis result

exceeded NJDEP ground-water criteria, then the highest analyte concentration of the two reported results was highlighted in bold to be conservative. If the initial result exceeded calibration range and was qualified with an "E", then the reanalysis result was highlighted in bold if it exceeded criteria.

- During anion analyses, three samples had a pH value greater than 10 and required dilution to effect neutralization prior to analysis (43BR, 44BR, and 46BR). Additional samples also required dilution in order to achieve concentrations of target analytes within calibration range. Both the undiluted and the diluted analytical results are presented on Table 4 for those samples where this applies.
- During the sampling event, EA collected samples that were submitted to the USGS for laboratory analyses. Analytical results for these samples are not included in this report.
- Third-party data validation of the October 1998 analytical results presented in this report has not been performed.

If you have any questions or need further information after reviewing the tables, please feel free to call us at (732) 404-9370.

Sincerely,

Laurie B. Wylie
Project Geologist

Steven G. Feldmann, P.G.
CTO Manager

SGF
Attachment

TABLE 1A
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812414 02BR-100798 10/7/98		9812312 03BR-100598 10/5/98		9812571 04BR-100998 10/9/98		9812571RE 04BR-100998RE 10/9/98		9812757 05BR-101498 10/14/98		9812419 06BR-100798 10/7/98	
1,1,1-Trichloroethane	ug/L	30	10	U	1	U	100	U	100	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	10	U	1	U	100	U	100	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	10	U	1	U	100	U	100	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	10	U	1	U	100	U	100	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	10	U	1	U	100	U	100	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	10	U	1	U	100	U	100	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	37	D	0.4	J	**1000**		890		1	J	1	U
1,2-Dichloroethene, trans-	ug/L	100	10	U	1	U	100	U	100	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	10	U	0.4	U	100	U	100	U	1	U	1	U
2-Butanone	ug/L	300	50	U	5	U	500	U	500	U	5	U	5	U
2-Hexanone	ug/L	NA	50	U	5	U	500	U	500	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	50	U	1	U	500	U	500	U	5	U	5	U
Acetone	ug/L	NA	50	U	5	U	500	U	500	U	5	U	5	U
Benzene	ug/L	1	10	U	0.4	U	100	U	100	U	1	U	1	U
Bromodichloromethane	ug/L	1	10	U	0.3	U	100	U	100	U	1	U	1	U
Bromoform	ug/L	4	10	U	1	U	100	U	100	U	1	U	1	U
Bromomethane	ug/L	NA	10	U	1	U	100	U	100	U	1	U	1	U
Carbon disulfide	ug/L	NA	10	U	1	U	100	U	100	U	1	U	1	U
Carbon tetrachloride	ug/L	2	10	U	1	U	100	U	100	U	1	U	1	U
Chlorobenzene	ug/L	4	10	U	1	U	100	U	100	U	1	U	1	U
Chloroethane	ug/L	NA	10	U	1	U	100	U	100	U	1	U	1	U
Chloroform	ug/L	6	10	U	1	U	100	U	100	U	1	U	1	U
Chloromethane	ug/L	NA	10	U	1	U	100	U	100	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	2	U	0.4	U	20	U	20	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	10	U	1	U	100	U	100	U	1	U	1	U
Ethylbenzene	ug/L	700	10	U	1	U	100	U	100	U	1	U	1	U
Methylene chloride	ug/L	3(4)	10	U	1	U	100	U	100	U	1	U	1	U
Styrene	ug/L	100	10	U	1	U	100	U	100	U	1	U	1	U
Tetrachloroethene	ug/L	1	10	U	0.5	U	100	U	100	U	1		1	U
Toluene	ug/L	1000	10	U	1	U	100	U	100	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	2	U	0.3	U	20	U	20	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	**87**	**D**	0.4	U	**280**		190	D	0.3	J	0.2	J
Vinyl chloride	ug/L	5	**11**	**D**	1	U	300		**310**	**D**	0.2	J	1	U
Xylenes, total	ug/L	1000(2)	10	U	1	U	100	U	100	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812419RE 06BR-100798RE 10/7/98		9812530 07BR-100898 10/8/98		9812530DL 07BR-100898DL 10/8/98		9812569 08BR-100998 10/9/98		982569RE 08BR-100998RE 10/9/98		9812416 09BR-100798 10/7/98	
1,1,1-Trichloroethane	ug/L	30	1	U	2000	U	5000	U	25	U	25	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	2000	U	5000	U	25	U	25	U	1	U
1,1,2-Trichloroethane	ug/L	3	1	U	2000	U	5000	U	25	U	25	U	1	U
1,1-Dichloroethane	ug/L	50(3)	1	U	2000	U	5000	U	25	U	25	U	8	
1,1-Dichloroethene	ug/L	2	1	U	2000	U	5000	U	25	U	25	U	0.4	J
1,2-Dichloroethane	ug/L	2	1	U	2000	U	5000	U	25	U	25	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	50000	E	**17000**	**D**	10	J	11	J	10	
1,2-Dichloroethene, trans-	ug/L	100	1	U	2000	U	5000	U	25	U	25	U	1	U
1,2-Dichloropropane	ug/L	1	1	U	2000	U	5000	U	25	U	25	U	1	U
2-Butanone	ug/L	300	5	U	10000	U	25000	U	130	U	130	U	5	U
2-Hexanone	ug/L	NA	5	U	10000	U	25000	U	130	U	130	U	5	U
4-Methyl-2-pentanone	ug/L	400	5	U	2000	U	5000	U	130	U	130	U	5	U
Acetone	ug/L	NA	5	U	10000	U	25000	U	130	U	130	U	5	U
Benzene	ug/L	1	1	U	2000	U	5000	U	25	U	25	U	1	U
Bromodichloromethane	ug/L	1	1	U	2000	U	5000	U	25	U	25	U	1	U
Bromoform	ug/L	4	1	U	2000	U	5000	U	25	U	25	U	1	U
Bromomethane	ug/L	NA	1	U	2000	U	5000	U	25	U	25	U	1	U
Carbon disulfide	ug/L	NA	1	U	2000	U	5000	U	25	U	25	U	1	U
Carbon tetrachloride	ug/L	2	1	U	2000	U	5000	U	25	U	25	U	1	U
Chlorobenzene	ug/L	4	1	U	2000	U	5000	U	25	U	25	U	1	U
Chloroethane	ug/L	NA	1	U	2000	U	5000	U	25	U	25	U	1	U
Chloroform	ug/L	6	1	U	2000	U	5000	U	25	U	25	U	1	U
Chloromethane	ug/L	NA	1	U	2000	U	5000	U	25	U	25	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	400	U	1000	U	5	U	5	U	0.2	U
Dibromochloromethane	ug/L	10	1	U	2000	U	5000	U	25	U	25	U	1	U
Ethylbenzene	ug/L	700	1	U	2000	U	5000	U	25	U	25	U	1	U
Methylene chloride	ug/L	3(4)	1	U	2000	U	**2200**	**JD**	25	U	25	U	1	U
Styrene	ug/L	100	1	U	2000	U	5000	U	25	U	25	U	1	U
Tetrachloroethene	ug/L	1	1	U	2000	U	5000	U	25	U	25	U	1	U
Toluene	ug/L	1000	1	U	2000	U	5000	U	25	U	25	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	400	U	1000	U	5	U	5	U	0.2	U
Trichloroethene	ug/L	1	1	U	**6300**		4800	JD	500		**520**	**D**	**5**	
Vinyl chloride	ug/L	5	1	U	**7000**		4000	JD	25	U	25	U	2	
Xylenes, total	ug/L	1000(2)	1	U	2000	U	5000	U	25	U	25	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812360 11BR-100698 10/6/98		9812413 12BR-100798 10/7/98		9812564 15BR-100998 10/9/98		9812564DL 15BR-100998DL 10/9/98		9812756 16BR-101498 10/14/98		9812756DL 16BR-101498DL 10/14/98	
1,1,1-Trichloroethane	ug/L	30	2	U	1	U	100	U	1000	U	0.2	J	20	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	2	U	1	U	100	U	1000	U	1	U	20	U
1,1,2-Trichloroethane	ug/L	3	2	U	1	U	100	U	1000	U	1	U	20	U
1,1-Dichloroethane	ug/L	50(3)	2	U	1	U	100	U	1000	U	0.5	J	20	U
1,1-Dichloroethene	ug/L	2	2	U	1	U	**68**	**J**	1000	U	1		20	U
1,2-Dichloroethane	ug/L	2	2	U	1	U	100	U	1000	U	1	U	20	U
1,2-Dichloroethene, cis-	ug/L	70	22		4		22000	E	**5100**	**D**	93	E	**110**	**D**
1,2-Dichloroethene, trans-	ug/L	100	2	U	1	U	100	U	1000	U	1	U	20	U
1,2-Dichloropropane	ug/L	1	2	U	1	U	100	U	1000	U	1	U	20	U
2-Butanone	ug/L	300	10	U	5	U	500	U	5000	U	5	U	100	U
2-Hexanone	ug/L	NA	10	U	5	U	500	U	5000	U	5	U	100	U
4-Methyl-2-pentanone	ug/L	400	10	U	5	U	500	U	5000	U	5	U	100	U
Acetone	ug/L	NA	10	U	5	U	500	U	5000	U	5	U	100	U
Benzene	ug/L	1	2	U	1	U	100	U	1000	U	1	U	20	U
Bromodichloromethane	ug/L	1	2	U	1	U	100	U	1000	U	1	U	20	U
Bromoform	ug/L	4	2	U	1	U	100	U	1000	U	1	U	20	U
Bromomethane	ug/L	NA	2	U	1	U	100	U	1000	U	1	U	20	U
Carbon disulfide	ug/L	NA	2	U	1	U	100	U	1000	U	1	U	20	U
Carbon tetrachloride	ug/L	2	2	U	1	U	100	U	1000	U	1	U	20	U
Chlorobenzene	ug/L	4	2	U	1	U	100	U	1000	U	1	U	20	U
Chloroethane	ug/L	NA	2	U	1	U	100	U	1000	U	1	U	20	U
Chloroform	ug/L	6	2	U	1	U	100	U	1000	U	1	U	20	U
Chloromethane	ug/L	NA	2	U	1	U	100	U	1000	U	1	U	20	U
cis-1,3-Dichloropropene	ug/L	NA	0.4	U	0.2	U	20	U	200	U	0.2	U	4	U
Dibromochloromethane	ug/L	10	2	U	1	U	100	U	1000	U	1	U	20	U
Ethylbenzene	ug/L	700	0.3	JD	1	U	100	U	1000	U	1	U	20	U
Methylene chloride	ug/L	3(4)	2	U	1	U	100	U	1000	U	1	U	20	U
Styrene	ug/L	100	2	U	1	U	100	U	1000	U	1	U	20	U
Tetrachloroethene	ug/L	1	2	U	1	U	100	U	1000	U	1	U	20	U
Toluene	ug/L	1000	0.2	JD	1	U	100	U	1000	U	1	U	20	U
trans-1,3-Dichloropropene	ug/L	0.02	0.4	U	0.2	U	20	U	200	U	0.2	U	4	U
Trichloroethene	ug/L	1	**7**	**D**	0.8	J	7000	E	**860**	**JD**	80	E	**110**	**D**
Vinyl chloride	ug/L	5	2	U	1	U	3500	E	**570**	**JD**	**6**		5	JD
Xylenes, total	ug/L	1000(2)	0.7	JD	1	U	100	U	1000	U	1	U	20	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812357 19BR-100698 10/6/98		9812755 20BR-101498 10/14/98		9812755DL 20BR-101498DL 10/14/98		9812356 21BR-100698 10/6/98		9812568 22BR-100998 10/9/98		9812568RE 22BR-100998RE 10/9/98	
1,1,1-Trichloroethane	ug/L	30	1	U	50	U	1000	U	0.8	J	5	U	5	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	50	U	1000	U	1	U	5	U	5	U
1,1,2-Trichloroethane	ug/L	3	1	U	50	U	1000	U	1	U	5	U	5	U
1,1-Dichloroethane	ug/L	50(3)	1	U	50	U	1000	U	1	U	5	U	5	U
1,1-Dichloroethene	ug/L	2	1	U	**180**	**D**	1000	U	0.3	J	5	U	1	JD
1,2-Dichloroethane	ug/L	2	1	U	50	U	1000	U	1	U	5	U	5	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	11000	DE	**8900**	**D**	2		**88**		87	
1,2-Dichloroethene, trans-	ug/L	100	1	U	50	U	1000	U	1	U	5	U	5	U
1,2-Dichloropropane	ug/L	1	1	U	50	U	1000	U	1	U	5	U	5	U
2-Butanone	ug/L	300	5	U	250	U	5000	U	5	U	25	U	25	U
2-Hexanone	ug/L	NA	5	U	250	U	5000	U	5	U	25	U	25	U
4-Methyl-2-pentanone	ug/L	400	5	U	250	U	5000	U	5	U	25	U	25	U
Acetone	ug/L	NA	5	U	250	U	5000	U	5	U	25	U	25	U
Benzene	ug/L	1	1	U	50	U	1000	U	1	U	5	U	5	U
Bromodichloromethane	ug/L	1	1	U	50	U	1000	U	1	U	5	U	5	U
Bromoform	ug/L	4	1	U	50	U	1000	U	1	U	5	U	5	U
Bromomethane	ug/L	NA	1	U	50	U	1000	U	1	U	5	U	5	U
Carbon disulfide	ug/L	NA	1	U	50	U	1000	U	1	U	5	U	5	U
Carbon tetrachloride	ug/L	2	1	U	50	U	1000	U	1	U	5	U	5	U
Chlorobenzene	ug/L	4	1	U	50	U	1000	U	1	U	5	U	5	U
Chloroethane	ug/L	NA	1	U	50	U	1000	U	1	U	5	U	5	U
Chloroform	ug/L	6	1	U	50	U	1000	U	0.5	J	5	U	5	U
Chloromethane	ug/L	NA	1	U	50	U	1000	U	1	U	5	U	5	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	10	U	200	U	0.2	U	1	U	1	U
Dibromochloromethane	ug/L	10	1	U	50	U	1000	U	1	U	5	U	5	U
Ethylbenzene	ug/L	700	1	U	50	U	1000	U	1	U	5	U	5	U
Methylene chloride	ug/L	3(4)	1	U	50	U	1000	U	1	U	5	U	5	U
Styrene	ug/L	100	1	U	50	U	1000	U	1	U	5	U	5	U
Tetrachloroethene	ug/L	1	1	U	50	U	1000	U	1	U	5	U	5	U
Toluene	ug/L	1000	1	U	50	U	1000	U	1	U	5	U	5	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	10	U	200	U	0.2	U	1	U	1	U
Trichloroethene	ug/L	1	1	U	**280**	**D**	1000	U	**4**		**25**		21	D
Vinyl chloride	ug/L	5	1	U	7200	DE	**2900**	**D**	1	U	5	U	5	U
Xylenes, total	ug/L	1000(2)	1	U	50	U	1000	U	1	U	5	U	5	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812526 27BR-100898 10/8/98		9812358 28BR-100698 10/6/98		9812567 29BR-100998 10/9/98		9812567RE 29BR-100998RE 10/9/98		9812681 30BR-101398 10/13/98		9812523 31BR-100898 10/8/98	
1,1,1-Trichloroethane	ug/L	30	1	U	1	U	100	U	100	U	5000	U	5	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	1	U	100	U	100	U	5000	U	5	U
1,1,2-Trichloroethane	ug/L	3	1	U	1	U	100	U	100	U	5000	U	5	U
1,1-Dichloroethane	ug/L	50(3)	1	U	1	U	100	U	100	U	**27000**		2	J
1,1-Dichloroethene	ug/L	2	1	U	1	U	100	U	100	U	5000	U	5	U
1,2-Dichloroethane	ug/L	2	1	U	1	U	100	U	100	U	5000	U	5	U
1,2-Dichloroethene, cis-	ug/L	70	0.2	J	1	U	**110**		83	J	**13000**		7	
1,2-Dichloroethene, trans-	ug/L	100	1	U	1	U	100	U	100	U	5000	U	5	U
1,2-Dichloropropane	ug/L	1	1	U	1	U	100	U	100	U	5000	U	5	U
2-Butanone	ug/L	300	5	U	5	U	500	U	500	U	25000	U	25	U
2-Hexanone	ug/L	NA	5	U	5	U	500	U	500	U	25000	U	25	U
4-Methyl-2-pentanone	ug/L	400	1	U	5	U	500	U	500	U	25000	U	25	U
Acetone	ug/L	NA	5	U	5	U	500	U	500	U	25000	U	25	U
Benzene	ug/L	1	1	U	1	U	100	U	100	U	5000	U	5	U
Bromodichloromethane	ug/L	1	1	U	1	U	100	U	100	U	5000	U	5	U
Bromoform	ug/L	4	1	U	1	U	100	U	100	U	5000	U	5	U
Bromomethane	ug/L	NA	1	U	1	U	100	U	100	U	5000	U	5	U
Carbon disulfide	ug/L	NA	1	U	1	U	100	U	100	U	5000	U	5	U
Carbon tetrachloride	ug/L	2	1	U	1	U	100	U	100	U	5000	U	5	U
Chlorobenzene	ug/L	4	1	U	1	U	100	U	100	U	5000	U	5	U
Chloroethane	ug/L	NA	1	U	1	U	100	U	100	U	5000	U	5	U
Chloroform	ug/L	6	1	U	0.3	J	100	U	100	U	5000	U	5	U
Chloromethane	ug/L	NA	1	U	1	U	100	U	100	U	5000	U	5	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	0.2	U	20	U	20	U	1000	U	1	U
Dibromochloromethane	ug/L	10	1	U	1	U	100	U	100	U	5000	U	5	U
Ethylbenzene	ug/L	700	1	U	1	U	100	U	100	U	5000	U	5	U
Methylene chloride	ug/L	3(4)	1	U	1	U	100	U	100	U	**2900**	**J**	5	U
Styrene	ug/L	100	1	U	1	U	100	U	100	U	5000	U	5	U
Tetrachloroethene	ug/L	1	1	U	1	U	100	U	100	U	5000	U	5	U
Toluene	ug/L	1000	1	U	1	U	100	U	100	U	5000	U	5	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	0.2	U	20	U	20	U	1000	U	1	U
Trichloroethene	ug/L	1	1	U	1	U	3000	E	**2100**	**D**	**19000**		19	
Vinyl chloride	ug/L	5	1	U	1	U	100	U	100	U	5000	U	5	U
Xylenes, total	ug/L	1000(2)	1	U	1	U	100	U	100	U	5000	U	5	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812523RE 31BR-100898RE 10/8/98		9812679 33BR-101398 10/13/98		9812819 35BR-101598 10/15/98		9812759 36BR-101498 10/14/98		9812359 37BR-100698 10/6/98		9812682 38BR-101398 10/13/98	
1,1,1-Trichloroethane	ug/L	30	5	U	1	U	1	U	10000	U	1	U	2000	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	5	U	1	U	1	U	10000	U	1	U	2000	U
1,1,2-Trichloroethane	ug/L	3	5	U	1	U	1	U	10000	U	1	U	2000	U
1,1-Dichloroethane	ug/L	50(3)	6		1	U	1	U	10000	U	1	U	2000	U
1,1-Dichloroethene	ug/L	2	5	U	1	U	1	U	10000	U	1	U	2000	U
1,2-Dichloroethane	ug/L	2	5	U	1	U	1	U	10000	U	1	U	2000	U
1,2-Dichloroethene, cis-	ug/L	70	7	D	1	U	1	U	10000	U	0.2	J	2700	
1,2-Dichloroethene, trans-	ug/L	100	5	U	1	U	1	U	10000	U	1	U	2000	U
1,2-Dichloropropane	ug/L	1	5	U	1	U	1	U	10000	U	1	U	2000	U
2-Butanone	ug/L	300	25	U	5	U	5	U	50000	U	5	U	10000	U
2-Hexanone	ug/L	NA	25	U	5	U	5	U	50000	U	5	U	10000	U
4-Methyl-2-pentanone	ug/L	400	5	U	5	U	5	U	50000	U	5	U	10000	U
Acetone	ug/L	NA	25	U	5	U	5	U	50000	U	5	U	10000	U
Benzene	ug/L	1	5	U	1	U	1	U	10000	U	1	U	2000	U
Bromodichloromethane	ug/L	1	5	U	1	U	1	U	10000	U	1	U	2000	U
Bromoform	ug/L	4	5	U	1	U	1	U	10000	U	1	U	2000	U
Bromomethane	ug/L	NA	5	U	1	U	1	U	10000	U	1	U	2000	U
Carbon disulfide	ug/L	NA	5	U	1	U	1	U	10000	U	1	U	2000	U
Carbon tetrachloride	ug/L	2	5	U	1	U	1	U	10000	U	1	U	2000	U
Chlorobenzene	ug/L	4	5	U	1	U	1	U	10000	U	1	U	2000	U
Chloroethane	ug/L	NA	5	U	1	U	1	U	10000	U	1	U	2000	U
Chloroform	ug/L	6	5	U	1	U	1	U	10000	U	1	U	2000	U
Chloromethane	ug/L	NA	5	U	1	U	1	U	10000	U	1	U	2000	U
cis-1,3-Dichloropropene	ug/L	NA	1	U	0.2	U	0.2	U	2000	U	0.2	U	400	U
Dibromochloromethane	ug/L	10	5	U	1	U	1	U	10000	U	1	U	2000	U
Ethylbenzene	ug/L	700	5	U	1	U	1	U	10000	U	1	U	2000	U
Methylene chloride	ug/L	3(4)	5	U	1	U	1	U	10000	U	1	U	2000	U
Styrene	ug/L	100	5	U	1	U	1	U	10000	U	1	U	2000	U
Tetrachloroethene	ug/L	1	5	U	1	U	1	U	10000	U	1	U	2000	U
Toluene	ug/L	1000	5	U	1	U	1	U	10000	U	1	U	2000	U
trans-1,3-Dichloropropene	ug/L	0.02	1	U	0.2	U	0.2	U	2000	U	0.2	U	400	U
Trichloroethene	ug/L	1	**24**		1	U	1	U	**10000**	**D**	**2**		22000	
Vinyl chloride	ug/L	5	3	J	1	U	1	U	10000	U	1	U	2000	U
Xylenes, total	ug/L	1000(2)	5	U	1	U	1	U	10000	U	1	U	2000	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812682RE 38BR-101398RE 10/13/98		9812527 39BR-100898 10/8/98		9812532 40BR-100898 10/8/98		9812565 41BR-100998 10/9/98		9812565RE 41BR-100998RE 10/9/98		9812528 42BR-100898 10/8/98	
1,1,1-Trichloroethane	ug/L	30	2000	U	1	U	20	U	20	U	20	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	2000	U	1	U	20	U	20	U	20	U	1	U
1,1,2-Trichloroethane	ug/L	3	2000	U	1	U	20	U	20	U	20	U	1	U
1,1-Dichloroethane	ug/L	50(3)	2000	U	1	U	20	U	20	U	20	U	1	U
1,1-Dichloroethene	ug/L	2	2000	U	1	U	20	U	**4**	**J**	20	U	1	U
1,2-Dichloroethane	ug/L	2	2000	U	1	U	20	U	20	U	20	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	**6700**		1	U	**110**		560		**560**		1	U
1,2-Dichloroethene, trans-	ug/L	100	2000	U	1	U	20	U	20	U	20	U	1	U
1,2-Dichloropropane	ug/L	1	2000	U	1	U	20	U	20	U	20	U	1	U
2-Butanone	ug/L	300	10000	U	5	U	100	U	100	U	100	U	5	U
2-Hexanone	ug/L	NA	10000	U	5	U	100	U	100	U	100	U	5	U
4-Methyl-2-pentanone	ug/L	400	10000	U	1	U	20	U	100	U	100	U	1	U
Acetone	ug/L	NA	10000	U	5	U	100	U	100	U	100	U	5	U
Benzene	ug/L	1	2000	U	1	U	20	U	20	U	20	U	1	U
Bromodichloromethane	ug/L	1	2000	U	1	U	20	U	20	U	20	U	1	U
Bromoform	ug/L	4	2000	U	1	U	20	U	20	U	20	U	1	U
Bromomethane	ug/L	NA	2000	U	1	U	20	U	20	U	20	U	1	U
Carbon disulfide	ug/L	NA	2000	U	1	U	20	U	20	U	20	U	1	U
Carbon tetrachloride	ug/L	2	2000	U	1	U	20	U	20	U	20	U	1	U
Chlorobenzene	ug/L	4	2000	U	1	U	20	U	20	U	20	U	1	U
Chloroethane	ug/L	NA	2000	U	1	U	20	U	20	U	20	U	1	U
Chloroform	ug/L	6	2000	U	1	U	20	U	20	U	20	U	1	U
Chloromethane	ug/L	NA	2000	U	1	U	20	U	20	U	20	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	400	U	0.2	U	4	U	4	U	4	U	0.2	U
Dibromochloromethane	ug/L	10	2000	U	1	U	20	U	20	U	20	U	1	U
Ethylbenzene	ug/L	700	2000	U	1	U	20	U	20	U	20	U	1	U
Methylene chloride	ug/L	3(4)	2000	U	1	U	20	U	20	U	20	U	1	U
Styrene	ug/L	100	2000	U	1	U	20	U	20	U	20	U	1	U
Tetrachloroethene	ug/L	1	2000	U	1	U	20	U	20	U	20	U	1	U
Toluene	ug/L	1000	2000	U	1	U	20	U	20	U	20	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	400	U	0.2	U	4	U	4	U	4	U	0.2	U
Trichloroethene	ug/L	1	**40000**		1	U	**120**		550	E	**300**	**D**	1	U
Vinyl chloride	ug/L	5	2000	U	1	U	20	U	**26**		20	U	1	U
Xylenes, total	ug/L	1000(2)	2000	U	1	U	20	U	20	U	20	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812591 43BR-101298 10/12/98		9812591RE 43BR-101298RE 10/12/98		9812592 44BR-101298 10/12/98		9812592RE 44BR-101298RE 10/12/98		9812760 45BR-101498 10/14/98		9812760DL 45BR-101498DL 10/14/98	
1,1,1-Trichloroethane	ug/L	30	1	U	1	U	1	U	1	U	200	U	1000	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	1	U	1	U	1	U	200	U	1000	U
1,1,2-Trichloroethane	ug/L	3	1	U	1	U	1	U	1	U	200	U	1000	U
1,1-Dichloroethane	ug/L	50(3)	1	U	1	U	1	U	1	U	200	U	1000	U
1,1-Dichloroethene	ug/L	2	1	U	1	U	1	U	1	U	200	U	1000	U
1,2-Dichloroethane	ug/L	2	1	U	1	U	1	U	1	U	200	U	1000	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	1	U	1	U	1	U	**2300**	**D**	880	DJ
1,2-Dichloroethene, trans-	ug/L	100	1	U	1	U	1	U	1	U	200	U	1000	U
1,2-Dichloropropane	ug/L	1	1	U	1	U	1	U	1	U	200	U	1000	U
2-Butanone	ug/L	300	5	U	5	U	5	U	5	U	1000	U	5000	U
2-Hexanone	ug/L	NA	5	U	5	U	5	U	5	U	1000	U	5000	U
4-Methyl-2-pentanone	ug/L	400	5	U	5	U	5	U	5	U	1000	U	5000	U
Acetone	ug/L	NA	5	U	5	U	5	U	5	U	1000	U	5000	U
Benzene	ug/L	1	1	U	1	U	0.3	J	0.2	J	200	U	1000	U
Bromodichloromethane	ug/L	1	1	U	1	U	1	U	1	U	200	U	1000	U
Bromoform	ug/L	4	1	U	1	U	1	U	1	U	200	U	1000	U
Bromomethane	ug/L	NA	1	U	1	U	1	U	1	U	200	U	1000	U
Carbon disulfide	ug/L	NA	1	U	1	U	1	U	1	U	200	U	1000	U
Carbon tetrachloride	ug/L	2	1	U	1	U	1	U	1	U	200	U	1000	U
Chlorobenzene	ug/L	4	1	U	1	U	1	U	1	U	200	U	1000	U
Chloroethane	ug/L	NA	1	U	1	U	1	U	1	U	200	U	1000	U
Chloroform	ug/L	6	1	U	1	U	1	U	0.1	J	200	U	1000	U
Chloromethane	ug/L	NA	1	U	1	U	1	U	1	U	200	U	1000	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	0.2	U	0.2	U	0.2	U	40	U	200	U
Dibromochloromethane	ug/L	10	1	U	1	U	1	U	1	U	200	U	1000	U
Ethylbenzene	ug/L	700	1	U	1	U	1	U	1	U	200	U	1000	U
Methylene chloride	ug/L	3(4)	1	U	1	U	1	U	1	U	200	U	1000	U
Styrene	ug/L	100	1	U	1	U	1	U	1	U	200	U	1000	U
Tetrachloroethene	ug/L	1	1	U	1	U	1	U	1	U	200	U	1000	U
Toluene	ug/L	1000	0.1	J	0.2	J	0.2	J	0.2	J	200	U	1000	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	0.2	U	0.2	U	0.2	U	40	U	200	U
Trichloroethene	ug/L	1	1	U	1	U	0.2	J	1	U	17000	DE	**4500**	**D**
Vinyl chloride	ug/L	5	1	U	1	U	1	U	1	U	200	U	1000	U
Xylenes, total	ug/L	1000(2)	1	U	1	U	1	U	1	U	200	U	1000	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812761 45BR-101498DUP3 10/14/98		9812761DL 45BR-101498DUP3DL 10/14/98		9812594 46BR-101298 10/12/98		9812594RE 46BR-101298RE 10/12/98		9812529 47BR-100898 10/8/98		9812529DL 47BR-100898DL 10/8/98	
1,1,1-Trichloroethane	ug/L	30	1	U	200	U	500	U	500	U	5	U	20	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	200	U	500	U	500	U	5	U	20	U
1,1,2-Trichloroethane	ug/L	3	1	U	200	U	500	U	500	U	5	U	20	U
1,1-Dichloroethane	ug/L	50(3)	1	U	200	U	500	U	500	U	1	J	20	U
1,1-Dichloroethene	ug/L	2	**3**		200	U	500	U	500	U	2	J	20	U
1,2-Dichloroethane	ug/L	2	1	U	200	U	500	U	500	U	5	U	20	U
1,2-Dichloroethene, cis-	ug/L	70	290	E	**330**	**DE**	500	U	500	U	260	E	**90**	**D**
1,2-Dichloroethene, trans-	ug/L	100	7		200	U	500	U	500	U	2	J	20	U
1,2-Dichloropropane	ug/L	1	1	U	200	U	500	U	500	U	5	U	20	U
2-Butanone	ug/L	300	5	U	1000	U	2500	U	2500	U	25	U	100	U
2-Hexanone	ug/L	NA	5	U	1000	U	2500	U	2500	U	25	U	100	U
4-Methyl-2-pentanone	ug/L	400	5	U	1000	U	2500	U	2500	U	5	U	20	U
Acetone	ug/L	NA	5	U	1000	U	2500	U	2500	U	25	U	100	U
Benzene	ug/L	1	1	U	200	U	500	U	500	U	5	U	20	U
Bromodichloromethane	ug/L	1	1	U	200	U	500	U	500	U	5	U	20	U
Bromoform	ug/L	4	1	U	200	U	500	U	500	U	5	U	20	U
Bromomethane	ug/L	NA	1	U	200	U	500	U	500	U	5	U	20	U
Carbon disulfide	ug/L	NA	1	U	200	U	500	U	500	U	5	U	20	U
Carbon tetrachloride	ug/L	2	1	U	200	U	500	U	500	U	5	U	20	U
Chlorobenzene	ug/L	4	1	U	200	U	500	U	500	U	5	U	20	U
Chloroethane	ug/L	NA	1	U	200	U	500	U	500	U	5	U	20	U
Chloroform	ug/L	6	1	U	200	U	500	U	500	U	5	U	20	U
Chloromethane	ug/L	NA	1	U	200	U	500	U	500	U	5	U	20	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	40	U	100	U	100	U	1	U	4	U
Dibromochloromethane	ug/L	10	1	U	200	U	500	U	500	U	5	U	20	U
Ethylbenzene	ug/L	700	1	U	200	U	500	U	500	U	5	U	20	U
Methylene chloride	ug/L	3(4)	*1*	*U*	*200*	*U*	*500*	U	500	U	5	U	20	U
Styrene	ug/L	100	1	U	200	U	500	U	500	U	5	U	20	U
Tetrachloroethene	ug/L	1	1	U	200	U	500	U	500	U	5	U	20	U
Toluene	ug/L	1000	0.4	J	200	U	500	U	500	U	5	U	20	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	40	U	100	U	100	U	1	U	4	U
Trichloroethene	ug/L	1	420	E	**2500**	**D**	**5600**	**D**	4700	D	160	E	**110**	**D**
Vinyl chloride	ug/L	5	2		200	U	500	U	500	U	**29**		16	JD
Xylenes, total	ug/L	1000(2)	1	U	200	U	500	U	500	U	5	U	20	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812562 48BR-100998 10/9/98		9812562DL 48BR-100998DL 10/9/98		9812595 49BR-101298 10/12/98		9812754 50BR-101498 10/14/98		9812758 50BR-101498DUP4 10/14/98		9812417 51BR-100798 10/7/98	
1,1,1-Trichloroethane	ug/L	30	5	U	50	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	5	U	50	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	5	U	50	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	5	U	50	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	0.6	J	50	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	5	U	50	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	21		21	JD	1		2		2		26	
1,2-Dichloroethene, trans-	ug/L	100	5	U	50	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	5	U	50	U	1	U	1	U	1	U	1	U
2-Butanone	ug/L	300	25	U	250	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/L	NA	25	U	250	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	25	U	250	U	5	U	5	U	5	U	5	U
Acetone	ug/L	NA	25	U	250	U	5	U	5	U	5	U	5	U
Benzene	ug/L	1	5	U	50	U	1	U	1	U	1	U	1	U
Bromodichloromethane	ug/L	1	5	U	50	U	1	U	1	U	1	U	1	U
Bromoform	ug/L	4	5	U	50	U	1	U	1	U	1	U	1	U
Bromomethane	ug/L	NA	5	U	50	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	5	U	50	U	1	U	1	U	1	U	1	U
Carbon tetrachloride	ug/L	2	5	U	50	U	1	U	1	U	1	U	1	U
Chlorobenzene	ug/L	4	5	U	50	U	1	U	1	U	1	U	1	U
Chloroethane	ug/L	NA	5	U	50	U	1	U	1	U	1	U	1	U
Chloroform	ug/L	6	5	U	50	U	1	U	1	U	1	U	0.3	J
Chloromethane	ug/L	NA	5	U	50	U	1	U	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	1	U	10	U	0.2	U	0.2	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	5	U	50	U	1	U	1	U	1	U	1	U
Ethylbenzene	ug/L	700	5	U	50	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/L	3(4)	5	U	**50**	**D**	1	U	1	U	1	U	1	U
Styrene	ug/L	100	5	U	50	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/L	1	5	U	50	U	1	U	1	U	1	U	1	U
Toluene	ug/L	1000	5	U	50	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	1	U	10	U	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	740	E	**1000**	**D**	1		**3**		**3**		78	E
Vinyl chloride	ug/L	5	2	J	50	U	1	U	1	U	1	U	0.4	J
Xylenes, total	ug/L	1000(2)	5	U	50	U	1	U	1	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812417DL 51BR-100798DL 10/7/98		9812418 51BR-100798DUP1 10/7/98		9812418DL 51BR-100798DUP1DL 10/7/98		9812313 11MW1-100598 10/5/98		9812589 35MW1-101298 10/12/98		9812590 35MW2-101298 10/12/98	
1,1,1-Trichloroethane	ug/L	30	5	U	1	U	10	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	5	U	1	U	10	U	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	5	U	1	U	10	U	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	5	U	1	U	10	U	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	5	U	1	U	10	U	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	5	U	1	U	10	U	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	17	D	27		13	D	2		2		0.3	J
1,2-Dichloroethene, trans-	ug/L	100	5	U	0.2	J	10	U	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	5	U	1	U	10	U	0.4	U	1	U	1	U
2-Butanone	ug/L	300	25	U	5	U	50	U	5	U	5	U	5	U
2-Hexanone	ug/L	NA	25	U	5	U	50	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	25	U	5	U	50	U	1	U	5	U	5	U
Acetone	ug/L	NA	25	U	5	U	50	U	5	U	5	U	5	U
Benzene	ug/L	1	5	U	1	U	10	U	0.4	U	1	U	1	U
Bromodichloromethane	ug/L	1	5	U	1	U	10	U	0.3	U	1	U	1	U
Bromoform	ug/L	4	5	U	1	U	10	U	1	U	1	U	1	U
Bromomethane	ug/L	NA	5	U	1	U	10	U	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	5	U	1	U	10	U	1	U	1	U	1	U
Carbon tetrachloride	ug/L	2	5	U	1	U	10	U	1	U	1	U	1	U
Chlorobenzene	ug/L	4	5	U	1	U	10	U	1	U	1	U	1	U
Chloroethane	ug/L	NA	5	U	1	U	10	U	1	U	1	U	1	U
Chloroform	ug/L	6	5	U	0.3	J	10	U	1	U	2		0.4	J
Chloromethane	ug/L	NA	5	U	1	U	10	U	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	1	U	0.2	U	2	U	0.4	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	5	U	1	U	10	U	1	U	1	U	1	U
Ethylbenzene	ug/L	700	5	U	1	U	10	U	1	U	1	U	1	U
Methylene chloride	ug/L	3(4)	5	U	1	U	10	U	1	U	1	U	1	U
Styrene	ug/L	100	5	U	1	U	10	U	1	U	1	U	1	U
Tetrachloroethene	ug/L	1	5	U	1	U	10	U	2		1	U	0.1	J
Toluene	ug/L	1000	5	U	1	U	10	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	1	U	0.2	U	2	U	0.3	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	79	D	120	E	49	D	25		4		0.9	J
Vinyl chloride	ug/L	5	5	U	0.3	J	10	U	1	U	1	U	1	U
Xylenes, total	ug/L	1000(2)	5	U	1	U	10	U	1	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812683 BRP1-101398 10/13/98		9812683DL BRP1-101398DL 10/13/98		9812563 BRP2-100998 10/9/98		9812563DL BRP2-100998DL 10/9/98		9812531 BRP-3-100898 10/8/98		9812856 WD-101698 10/16/98	
1,1,1-Trichloroethane	ug/L	30	10	U	50	U	100	U	1000	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	10	U	50	U	100	U	1000	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	10	U	50	U	100	U	1000	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	10	U	50	U	100	U	1000	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	**4**	**J**	50	U	**39**	**J**	1000	U	1	U	**16**	
1,2-Dichloroethane	ug/L	2	10	U	50	U	100	U	1000	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	470	E	**650**	**D**	19000	E	**2700**	**D**	9		450	
1,2-Dichloroethene, trans-	ug/L	100	4		6	J	100	U	1000	U	1	U	20	
1,2-Dichloropropane	ug/L	1	10	U	50	U	100	U	1000	U	1	U	1	U
2-Butanone	ug/L	300	100		250	U	500	U	5000	U	5	U	5	U
2-Hexanone	ug/L	NA	50	U	250	U	500	U	5000	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	50	U	250	U	500	U	5000	U	1	U	5	U
Acetone	ug/L	NA	50	U	250	U	500	U	5000	U	5	U	5	U
Benzene	ug/L	1	10	U	50	U	100	U	1000	U	1	U	1	U
Bromodichloromethane	ug/L	1	10	U	50	U	100	U	1000	U	1	U	1	U
Bromoform	ug/L	4	10	U	50	U	100	U	1000	U	1	U	1	U
Bromomethane	ug/L	NA	10	U	50	U	100	U	1000	U	1	U	1	U
Carbon disulfide	ug/L	NA	10	U	50	U	100	U	1000	U	1	U	1	U
Carbon tetrachloride	ug/L	2	10	U	50	U	100	U	1000	U	1	U	1	U
Chlorobenzene	ug/L	4	10	U	50	U	100	U	1000	U	1	U	1	U
Chloroethane	ug/L	NA	10	U	50	U	100	U	1000	U	1	U	1	U
Chloroform	ug/L	6	10	U	50	U	100	U	1000	U	1	U	1	U
Chloromethane	ug/L	NA	10	U	50	U	100	U	1000	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	2	U	10	U	20	U	200	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	10	U	50	U	100	U	1000	U	1	U	1	U
Ethylbenzene	ug/L	700	10	U	50	U	100	U	1000	U	1	U	1	U
Methylene chloride	ug/L	3(4)	10	U	50	U	100	U	1000	U	1	U	1	U
Styrene	ug/L	100	10	U	50	U	100	U	1000	U	1	U	1	U
Tetrachloroethene	ug/L	1	10	U	50	U	100	U	1000	U	1	U	1	U
Toluene	ug/L	1000	10	U	50	U	100	U	1000	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	2	U	10	U	20	U	200	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	200		**620**	**D**	**37**	**J**	1000	U	**5**		110	E
Vinyl chloride	ug/L	5	110		**180**	**D**	15000	E	**2300**	**D**	1	U	380	E
Xylenes, total	ug/L	1000(2)	10	U	50	U	100	U	1000	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812856DL WD-101698DL 10/16/98		9812415 12S-100798 10/7/98		9812570 31S-100998 10/9/98		9812570RE 31S-100998RE 10/9/98		9812680 32S-101398 10/13/98		9812684 32S-101398DUP2 10/13/98	
1,1,1-Trichloroethane	ug/L	30	200	U	20	U	5	J	4	JD	11		10	
1,1,2,2-Tetrachloroethane	ug/L	1(6)	200	U	20	U	10	U	10	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	200	U	20	U	10	U	10	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	200	U	20	U	15		17	D	7		7	
1,1-Dichloroethene	ug/L	2	200	U	20	U	6	J	**12**	**D**	**4**		**4**	
1,2-Dichloroethane	ug/L	2	200	U	20	U	10	U	10	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	**1000**	**D**	**240**	**D**	27		27		1	U	1	U
1,2-Dichloroethene, trans-	ug/L	100	200	U	20	U	10	U	10	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	200	U	20	U	10	U	10	U	1	U	1	U
2-Butanone	ug/L	300	1000	U	100	U	50	U	50	U	5	U	5	U
2-Hexanone	ug/L	NA	1000	U	100	U	50	U	50	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	1000	U	100	U	50	U	50	U	5	U	5	U
Acetone	ug/L	NA	1000	U	100	U	50	U	50	U	5	U	5	U
Benzene	ug/L	1	200	U	20	U	10	U	10	U	1	U	1	U
Bromodichloromethane	ug/L	1	200	U	20	U	10	U	10	U	1	U	1	U
Bromoform	ug/L	4	200	U	20	U	10	U	10	U	1	U	1	U
Bromomethane	ug/L	NA	200	U	20	U	10	U	10	U	1	U	1	U
Carbon disulfide	ug/L	NA	200	U	20	U	2	J	10	U	1	U	1	U
Carbon tetrachloride	ug/L	2	200	U	20	U	10	U	10	U	1	U	1	U
Chlorobenzene	ug/L	4	200	U	20	U	10	U	10	U	1	U	1	U
Chloroethane	ug/L	NA	200	U	20	U	10	U	10	U	1	U	1	U
Chloroform	ug/L	6	200	U	20	U	10	U	10	U	1	U	1	U
Chloromethane	ug/L	NA	200	U	20	U	10	U	10	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	40	U	4	U	2	U	2	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	200	U	20	U	10	U	10	U	1	U	1	U
Ethylbenzene	ug/L	700	200	U	20	U	10	U	10	U	1	U	1	U
Methylene chloride	ug/L	3(4)	200	U	20	U	10	U	10	U	1	U	1	U
Styrene	ug/L	100	200	U	20	U	10	U	10	U	1	U	1	U
Tetrachloroethene	ug/L	1	200	U	20	U	10	U	10	U	1	U	1	U
Toluene	ug/L	1000	200	U	20	U	10	U	10	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	40	U	4	U	2	U	2	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	**54**	**JD**	**94**	**D**	**70**		57	D	1	U	1	U
Vinyl chloride	ug/L	5	**380**	**D**	**58**	**D**	2	J	10	U	1	U	1	U
Xylenes, total	ug/L	1000(2)	200	U	20	U	10	U	10	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812311 37S-10/5/98 10/5/98		9812309 FB - 1 10/5/98		9812355 FB2-100698 10/6/98		9812411 FB3-100798 10/7/98		9812525 FB4-100898 10/8/98		9812588 FB5-101298 10/12/98	
1,1,1-Trichloroethane	ug/L	30	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, trans-	ug/L	100	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	0.4	U	0.4	U	1	U	1	U	1	U	1	U
2-Butanone	ug/L	300	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/L	NA	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	1	U	1	U	5	U	5	U	1	U	5	U
Acetone	ug/L	NA	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/L	1	0.4	U	0.4	U	1	U	1	U	1	U	1	U
Bromodichloromethane	ug/L	1	0.3	U	0.3	U	1	U	1	U	1	U	1	U
Bromoform	ug/L	4	1	U	1	U	1	U	1	U	1	U	1	U
Bromomethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Carbon tetrachloride	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
Chlorobenzene	ug/L	4	1	U	1	U	1	U	1	U	1	U	1	U
Chloroethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/L	6	3		6		4		1	U	1	U	0.6	J
Chloromethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	0.4	U	0.4	U	0.2	U	0.2	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	ug/L	700	1	U	1	U	0.2	J	1	U	1	U	1	U
Methylene chloride	ug/L	3(4)	1	U	2		1	J	2		2		0.5	JB
Styrene	ug/L	100	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/L	1	0.5	U	0.5	U	1	U	1	U	1	U	1	U
Toluene	ug/L	1000	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	0.3	U	0.3	U	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	3		0.4	U	1	U	1	U	1	U	0.2	J
Vinyl chloride	ug/L	5	1	U	1	U	1	U	1	U	1	U	1	U
Xylenes, total	ug/L	1000(2)	1	U	1	U	0.3	J	1	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812593 FB6-101298 10/12/98		9812678 FB7-101398 10/13/98		9812753 FB8-101498 10/14/98		9812827 FB9-101598 10/15/98		9812310 TRIP BLANK 10/5/98		9812354 TRIP BLANK 10/6/98	
1,1,1-Trichloroethane	ug/L	30	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, trans-	ug/L	100	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	1	U	1	U	1	U	1	U	0.4	U	1	U
2-Butanone	ug/L	300	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/L	NA	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	5	U	5	U	5	U	5	U	1	U	5	U
Acetone	ug/L	NA	5	U	5	U	5	U	7		5	U	5	U
Benzene	ug/L	1	1	U	1	U	1	U	1	U	0.4	U	1	U
Bromodichloromethane	ug/L	1	1	U	1	U	1	U	1	U	0.3	U	1	U
Bromoform	ug/L	4	1	U	1	U	1	U	1	U	1	U	1	U
Bromomethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Carbon tetrachloride	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
Chlorobenzene	ug/L	4	1	U	1	U	1	U	1	U	1	U	1	U
Chloroethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/L	6	1		1	U	1	U	2		1	U	1	U
Chloromethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	0.2	U	0.2	U	0.2	U	0.4	U	0.2	U
Dibromochloromethane	ug/L	10	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	ug/L	700	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/L	3(4)	1	B	2		1		3	B	1	U	1	U
Styrene	ug/L	100	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/L	1	1	U	1	U	1	U	1	U	0.5	U	1	U
Toluene	ug/L	1000	1	U	1	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	0.2	U	0.2	U	0.2	U	0.3	U	0.2	U
Trichloroethene	ug/L	1	1	U	1	U	1	U	1	U	0.4	U	1	U
Vinyl chloride	ug/L	5	1	U	1	U	1	U	1	U	1	U	1	U
Xylenes, total	ug/L	1000(2)	1	U	1	U	1	U	1	U	1	U	1	U

TABLE 1A (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812410 TRIP BLANK 10/7/98		9812524 TRIP BLANK 10/8/98		9812566 TRIPBLANK 10/9/98		9812566RE TRIP BLANK 10/9/98		9812587 TRIP BLANK 10/12/98		9812677 TRIP BLANK 10/13/98	
1,1,1-Trichloroethane	ug/L	30	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	1	U	1	U	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	1	U	1	U	1	U	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloroethene, trans-	ug/L	100	1	U	1	U	1	U	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	1	U	1	U	1	U	1	U	1	U	1	U
2-Butanone	ug/L	300	5	U	5	U	5	U	5	U	5	U	5	U
2-Hexanone	ug/L	NA	5	U	5	U	5	U	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	5	U	1	U	5	U	5	U	5	U	5	U
Acetone	ug/L	NA	5	U	5	U	5	U	5	U	5	U	5	U
Benzene	ug/L	1	1	U	1	U	1	U	1	U	1	U	1	U
Bromodichloromethane	ug/L	1	1	U	1	U	1	U	1	U	1	U	1	U
Bromoform	ug/L	4	1	U	1	U	1	U	1	U	1	U	1	U
Bromomethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Carbon tetrachloride	ug/L	2	1	U	1	U	1	U	1	U	1	U	1	U
Chlorobenzene	ug/L	4	1	U	1	U	1	U	1	U	1	U	1	U
Chloroethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
Chloroform	ug/L	6	1	U	1	U	1	U	1	U	1	U	1	U
Chloromethane	ug/L	NA	1	U	1	U	1	U	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	1	U	1	U	1	U	1	U	1	U	1	U
Ethylbenzene	ug/L	700	1	U	1	U	1	U	1	U	1	U	1	U
Methylene chloride	ug/L	3(4)	0.8	J	1	U	1	U	1	U	1	U	1	U
Styrene	ug/L	100	1	U	1	U	1	U	1	U	1	U	1	U
Tetrachloroethene	ug/L	1	1	U	1	U	1	U	1	U	1	U	1	U
Toluene	ug/L	1000	0.1	J	1	U	1	U	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	0.8	J	1	U	1	U	1	U	1	U	1	U
Vinyl chloride	ug/L	5	1	U	1	U	1	U	1	U	1	U	1	U
Xylenes, total	ug/L	1000(2)	1	U	1	U	1	U	1	U	1	U	1	U

TABLE 1A (*continued*)
SUMMARY OF GROUND-WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812752 TRIP BLANK 10/14/98		9812828 TRIP BLANK 10/15/98		9812857 TRIP BLANK 10/16/98	
1,1,1-Trichloroethane	ug/L	30	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1(6)	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	3	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	50(3)	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	2	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	2	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	70	1	U	1	U	1	U
1,2-Dichloroethene, trans-	ug/L	100	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	1	1	U	1	U	1	U
2-Butanone	ug/L	300	5	U	5	U	5	U
2-Hexanone	ug/L	NA	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	400	5	U	5	U	5	U
Acetone	ug/L	NA	5	U	5	U	5	U
Benzene	ug/L	1	1	U	1	U	1	U
Bromodichloromethane	ug/L	1	1	U	1	U	1	U
Bromoform	ug/L	4	1	U	1	U	1	U
Bromomethane	ug/L	NA	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	1	U	1	U	1	U
Carbon tetrachloride	ug/L	2	1	U	1	U	1	U
Chlorobenzene	ug/L	4	1	U	1	U	1	U
Chloroethane	ug/L	NA	1	U	1	U	1	U
Chloroform	ug/L	6	1	U	1	U	1	U
Chloromethane	ug/L	NA	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	NA	0.2	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	10	1	U	1	U	1	U
Ethylbenzene	ug/L	700	1	U	1	U	1	U
Methylene chloride	ug/L	3(4)	1	U	1	U	1	U
Styrene	ug/L	100	1	U	1	U	1	U
Tetrachloroethene	ug/L	1	1	U	1	U	1	U
Toluene	ug/L	1000	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.02	0.2	U	0.2	U	0.2	U
Trichloroethene	ug/L	1	1	U	1	U	1	U
Vinyl chloride	ug/L	5	1	U	1	U	1	U
Xylenes, total	ug/L	1000(2)	1	U	1	U	1	U

TABLE 1B
SUMMARY OF STORM DRAIN WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Surface Water Quality Criteria	9812824 OF22-101598 10/15/98		9812824DL OF22-101598 10/15/98		9812825 OF22-101598DUP5 10/15/98		9812825DL OF22-101598DUP5DL 10/15/98		9812826 OF23-101598 10/15/98		9812823 OF24-101598 10/15/98	
1,1,1-Trichloroethane	ug/L	127	1	U	5	U	1	U	5	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1.72	1	U	5	U	1	U	5	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	13.5	1	U	5	U	1	U	5	U	1	U	1	U
1,1-Dichloroethane	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
1,1-Dichloroethene	ug/L	4.81	1	U	5	U	1	U	5	U	1	U	1	U
1,2-Dichloroethane	ug/L	0.291	1	U	5	U	1	U	5	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	NA	130	E	110	D	130	E	110	D	1	U	1	
1,2-Dichloroethene, trans-	ug/L	592	1	U	5	U	1	U	5	U	1	U	1	U
1,2-Dichloropropane	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
2-Butanone	ug/L	NA	5	U	25	U	5	U	25	U	5	U	5	U
2-Hexanone	ug/L	NA	5	U	25	U	5	U	25	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	NA	5	U	25	U	5	U	25	U	5	U	5	U
Acetone	ug/L	NA	5	U	6	JD	5	U	25	U	6		5	U
Benzene	ug/L	0.15	1	U	5	U	1	U	5	U	1	U	1	U
Bromodichloromethane	ug/L	0.266	1	U	5	U	1	U	5	U	1	U	1	U
Bromoform	ug/L	4.38	1	U	5	U	1	U	5	U	1	U	1	U
Bromomethane	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
Carbon disulfide	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
Carbon tetrachloride	ug/L	0.363	1	U	5	U	1	U	5	U	1	U	1	U
Chlorobenzene	ug/L	22.0	1	U	5	U	1	U	5	U	1	U	1	U
Chloroethane	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
Chloroform	ug/L	NA	1	U	5	U	1	U	5	U	1		1	U
Chloromethane	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	0.193 (7)	0.2	U	1	U	0.2	U	1	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	72.6	1	U	5	U	1	U	5	U	1	U	1	U
Ethylbenzene	ug/L	3,030	1	U	5	U	1	U	5	U	1	U	1	U
Methylene chloride	ug/L	2.49	1	U	5	U	1	U	5	U	1	U	1	U
Styrene	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U
Tetrachloroethene	ug/L	0.388	1	U	5	U	1	U	5	U	1	U	1	U
Toluene	ug/L	7,440	1	U	5	U	1	U	5	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.193 (7)	0.2	U	1	U	0.2	U	1	U	0.2	U	0.2	U
Trichloroethene	ug/L	1.09	160	E	**150**	**D**	150	E	**140**	**D**	1	U	1	U
Vinyl chloride	ug/L	0.0830	**24**		18	D	**24**		17	D	1	U	1	U
Xylenes, total	ug/L	NA	1	U	5	U	1	U	5	U	1	U	1	U

TABLE 1B (continued)
SUMMARY OF STORM DRAIN WATER ANALYSES FOR VOLATILES
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Surface Water Quality Criteria	9812822 OF25-101598 10/15/98		9812821 ST26-101598 10/15/98		9812820 ST27-101598 10/15/98	
1,1,1-Trichloroethane	ug/L	127	1	U	1	U	1	U
1,1,2,2-Tetrachloroethane	ug/L	1.72	1	U	1	U	1	U
1,1,2-Trichloroethane	ug/L	13.5	1	U	1	U	1	U
1,1-Dichloroethane	ug/L	NA	1	U	1	U	1	U
1,1-Dichloroethene	ug/L	4.81	1	U	1	U	1	U
1,2-Dichloroethane	ug/L	0.291	1	U	1	U	1	U
1,2-Dichloroethene, cis-	ug/L	NA	1	U	1	U	1	U
1,2-Dichloroethene, trans-	ug/L	592	1	U	1	U	1	U
1,2-Dichloropropane	ug/L	NA	1	U	1	U	1	U
2-Butanone	ug/L	NA	5	U	5	U	5	U
2-Hexanone	ug/L	NA	5	U	5	U	5	U
4-Methyl-2-pentanone	ug/L	NA	5	U	5	U	5	U
Acetone	ug/L	NA	5	U	5	U	5	U
Benzene	ug/L	0.15	1	U	1	U	1	U
Bromodichloromethane	ug/L	0.266	1	U	1	U	1	U
Bromoform	ug/L	4.38	1	U	1	U	1	U
Bromomethane	ug/L	NA	1	U	1	U	1	U
Carbon disulfide	ug/L	NA	1	U	1	U	1	U
Carbon tetrachloride	ug/L	0.363	1	U	1	U	1	U
Chlorobenzene	ug/L	22.0	1	U	1	U	1	U
Chloroethane	ug/L	NA	1	U	1	U	1	U
Chloroform	ug/L	NA	1	U	1	U	1	U
Chloromethane	ug/L	NA	1	U	1	U	1	U
cis-1,3-Dichloropropene	ug/L	0.193	0.2	U	0.2	U	0.2	U
Dibromochloromethane	ug/L	72.6	1	U	1	U	1	U
Ethylbenzene	ug/L	3,030	1	U	1	U	1	U
Methylene chloride	ug/L	2.49	1	U	1	U	1	U
Styrene	ug/L	NA	1	U	1	U	1	U
Tetrachloroethene	ug/L	0.388	1	U	1	U	1	U
Toluene	ug/L	7,440	1	U	1	U	1	U
trans-1,3-Dichloropropene	ug/L	0.193	0.2	U	0.2	U	0.2	U
Trichloroethene	ug/L	1.09	1	U	1	U	1	
Vinyl chloride	ug/L	0.0830	1	U	1	U	1	U
Xylenes, total	ug/L	NA	1	U	1	U	1	U

TABLE 2
SUMMARY OF GROUND-WATER ANALYSES FOR METALS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812414 02BR-100798 10/7/98		9812312 03BR-100598 10/5/98		9812571 04BR-100998 10/9/98		9812757 5BR-101498 10/14/98		9812419 MW6BR-100798 10/7/98		9812530 07BR-100898 10/8/98	
Barium	ug/L	2000	8.9	B	18.3	B	158	B	73.3	B	134	B	265	
Calcium	ug/L	NA	26500		29400		45200	N	58800		39000		65400	N
Iron	ug/L	300	**12700**		13.0	U	**1090**		39.5	B	33.7	B	**2740**	
Magnesium	ug/L	NA	10200		10400		11900		17300		13200		20400	
Potassium	ug/L	NA	1320	B	1130	B	2320		1180	B	1380	B	2430	
Sodium	ug/L	50,000	13100		9080		23000		10900		9190		18900	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812569 08BR-100998 10/9/98		9812416 9BR-100798 10/7/98		9812360 11BR-100698 10/6/98		9812413 12BR-100798 10/7/98		9812564 15BR-100998 10/9/98		9812565 15BR-100998 10/9/98	
Barium	ug/L	2000	26.6	B	8.5	B	7.0	U	23.2	B	387		118	B
Calcium	ug/L	NA	32500	N	31700		17900		32100		61300	N	47800	N
Iron	ug/L	300	106		**2110**		13.0	U	13.0	U	**648**		13.0	U
Magnesium	ug/L	NA	12900		10500		6280		11100		22300		15900	
Potassium	ug/L	NA	1710		1470	B	884	B	1210	B	2320		1550	
Sodium	ug/L	50,000	22200		12200		10100		9560		15700		17400	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812756 16BR-101498 10/14/98		9812357 19BR-100698 10/6/98		9812755 20BR-101498 10/14/98		9812356 21BR-100698 10/6/98		9812568 22BR-100998 10/9/98		9812526 27BR-100898 10/8/98	
Barium	ug/L	2000	122	B	13.5	B	84.2	B	19.1	B	21.0	B	120	B
Calcium	*ug/L*	*NA*	*50800*		*27600*		57200		34700		51400	N	29500	N
Iron	ug/L	300	37.8	B	13.0	U	**1360**		**484**		18.2	B	182	
Magnesium	ug/L	NA	16600		12000		18900		10200		13400		10900	
Potassium	ug/L	NA	1720	B	2150	B	1770	B	2010	B	877	B	3480	
Sodium	ug/L	50,000	18200		15900		17600		17100		12600		11300	

TABLE 2 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR METALS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812358 28BR-100698 10/6/98		9812567 29BR-100998 10/9/98		9812681 30BR-101398 10/13/98		9812523 31BR-100898 10/8/98		9812679 33BR-101398 10/13/98		9812412 MW34BR-100798 10/7/98	
Barium	ug/L	2000	35.5	B	166	B	513		8.2	B	179	B	7.0	U
Calcium	ug/L	NA	47200		29700	N	38200		31000	N	53100		49100	
Iron	ug/L	300	26.7	B	53.4	B	**554**		13.0	U	**564**		200	
Magnesium	ug/L	NA	16200		12000		17000		13100		19900		10600	
Potassium	ug/L	NA	949	B	2130		2550	B	2220		2280	B	865	B
Sodium	ug/L	50,000	9770		17200		34300		15100		21400		11000	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812819 35BR-101598 10/15/98		9812759 36BR-101498 10/14/98		9812359 37BR-100698 10/6/98		9812682 38BR-101398 10/13/98		9812527 39BR-100898 10/8/98		9812532 40BR-100898 10/8/98	
Barium	ug/L	2000	7.4	U	315		200		644		114	B	84.0	B
Calcium	ug/L	NA	24900		34000		22500		43500		24800	N	28700	N
Iron	ug/L	300	70.8	B	**1120**		**508**		**436**		**368**		167	
Magnesium	ug/L	NA	8460		14700		8570		19200		9960		11300	
Potassium	ug/L	NA	10300		2110	B	1890	B	2500	B	2230		1990	
Sodium	ug/L	50,000	8350		12900		10700		20800		15400		10300	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812565 41BR-100998 10/09/98		9812528 42BR-100898 10/8/98		9812591 43BR-101298 10/12/98		9812592 44BR-101298 10/12/98		9812760 45BR-101498 10/14/98		9812761 45BR-101498DUP3 10/14/98	
Barium	ug/L	2000	118	B	27.7	B	7.4	U	7.4	U	194	B	193	B
Calcium	ug/L	NA	47800	N	2190	N	1760	B	1400	B	33700		33200	
Iron	ug/L	300	13.0	U	13.0	U	139		68.4	B	**346**		258	
Magnesium	ug/L	NA	15900		729	B	32.9	U	35.2	B	11900		11800	
Potassium	ug/L	NA	1550		5000		64000		21300		1640	B	1450	B
Sodium	ug/L	50,000	17400		**63000**		**197000**		**90100**		12700		13100	

TABLE 2 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR METALS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812594 46BR-101298 10/12/98		9812529 47BR-100898 10/8/98		9812562 48BR-100998 10/9/98		9812595 49BR-101298 10/12/98		9812754 50BR-101498 10/14/98		9812758 50BR-101498DUP4 10/14/98	
Barium	ug/L	2000	176	B	31.3	B	20.3	B	12.3	B	7.4	U	7.4	U
Calcium	ug/L	NA	8130		38000	N	35700	N	23600		35700		35900	
Iron	ug/L	300	291		**2430**		13.0	U	**561**		131		122	
Magnesium	ug/L	NA	32.9	U	16200		12100		9220		11200		11300	
Potassium	ug/L	NA	22500		1830		1190		1570	B	1180	B	1280	B
Sodium	ug/L	50,000	**97000**		28900		10600		15600		9210		9100	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812417 51BR-100798 10/7/98		9812418 51BR-100798DUP1 10/07/98		9812313 11MW1-100598 10/5/98		9812589 35MW1-101298 10/12/98		9812590 35MW2-101298 10/12/98		9812531 BRP1-100898 10/8/98	
Barium	ug/L	2000	7.0	U	7.0	U	39.0	B	40.3	B	164	B	96.0	B
Calcium	ug/L	NA	32500		30600		7400		11000		12900		48500	N
Iron	ug/L	300	13.0	U	13.0	U	35.8	B	28.0	B	19.9	B	**1700**	
Magnesium	ug/L	NA	8890		8810		4660	B	10100		9120		20700	
Potassium	ug/L	NA	2950	B	3490	B	1460	B	2670	B	2410	B	3440	
Sodium	ug/L	50,000	11700		12100		7900		28700		18000		18300	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812563 BRP2-100998 10/8/98		9812683 BRP1-101398 10/13/98		9812531 BRP-3-100898 10/08/98		9812856 WD-101698 10/16/98		9812415 12S-100798 10/7/98		9812570 31S-100998 10/9/98	
Barium	ug/L	2000	309		49.8	B	96.0	B	118	B	36.4	B	20.7	B
Calcium	ug/L	NA	78000	N	51900		48500	N	59800		35800		20000	N
Iron	ug/L	300	**4260**		**2720**		**1700**		**3050**		**2660**		**1780**	
Magnesium	ug/L	NA	27000		17500		20700		20300		19600		6860	
Potassium	ug/L	NA	2820		1860	B	3440		2520	B	3310	B	2360	
Sodium	ug/L	50,000	48600		31100		18300		20900		21700		25500	

TABLE 2 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR METALS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812680 32S-101398 10/13/98		9812684 32S-101398DUP2 10/13/98		9812311 37S-10/5/98 10/5/98		9812309 FB-1 10/5/98		9812355 FB2-100698 10/6/98		9812411 FB3-100798 10/7/98	
Barium	ug/L	2000	90.0	B	88.9	B	658		7.0	U	7.0	U	7.0	U
Calcium	ug/L	NA	37900		38200		118000		149	B	84.8	B	37.0	U
Iron	ug/L	300	29.8	B	13.0	U	13.0	U	13.0	U	13.0	U	13.0	U
Magnesium	ug/L	NA	14300		14400		57000		78.3	B	82.5	B	33.0	U
Potassium	ug/L	NA	2180	B	2110	B	5660		84.0	U	84.0	U	84.0	U
Sodium	ug/L	50,000	28100		28200		35700		220	B	204	B	28.0	U

Analyte	Units	NJDEP Groundwater Quality Criteria	9812525 FB4-100898 10/8/98		9812588 FB5-101298 10/12/98		9812678 FB7-101398 10/13/98		9812753 FB8-101498 10/14/98		9812827 FD9101598 10/15/98	
Barium	ug/L	2000	5.1	U	7.4	U	7.4	U	7.4	U	7.4	U
Calcium	ug/L	NA	72.3	BN	31.8	B	41.0	B	51.1	B	21.8	B
Iron	ug/L	300	13.0	U	13.0	U	13.0	U	13.0	U	13.0	U
Magnesium	ug/L	NA	39.0	U	32.9	U	32.9	U	32.9	U	32.9	U
Potassium	ug/L	NA	84.2	U	84.2	U	84.2	U	84.2	U	84.2	U
Sodium	ug/L	50,000	331	B	28.1	U	55.6	B	28.1	U	28.1	U

TABLE 3
SUMMARY OF GROUND-WATER ANALYSES FOR GENERAL CHEMISTRY PARAMETERS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812414 02BR-100798 10/07/98	9812312 03BR-100598 10/05/98	9812571 04BR-100998 10/09/98	9812757 5BR-101498 10/14/98	9812419 MW6BR-100798 10/07/98	9812530 07BR-100898 10/08/98
TDS	mg/L	NA	131	134	288	280	249	341
Ammonia, dissolved	mg/L	NA	0.11	0.10 U	0.46	0.11	0.21	0.12
DOC	mg/L	NA	1.7	0.20	2.7	0.42	0.47	7.7

Analyte	Units	NJDEP Groundwater Quality Criteria	9812569 08BR-100998 10/09/98	9812416 9BR-100798 10/07/98	9812360 11BR-100698 10/06/98	9812413 12BR-100798 10/07/98	9812564 15BR-100998 10/09/98	9812756 16BR-101498 10/14/98
TDS	mg/L	NA	291	173	78.0	196	336	273
Ammonia, dissolved	mg/L	NA	0.10 U	0.14	0.10 U	0.11	0.11	0.10 U
DOC	mg/L	NA	0.88	1.5	0.36	0.61	4.3	1.3

Analyte	Units	NJDEP Groundwater Quality Criteria	9812357 19BR-100698 10/06/98	9812755 20BR-101498 10/14/98	9812356 21BR-100698 10/06/98	9812568 22BR-100998 10/09/98	9812526 27BR-100898 10/08/98	9812358 28BR-100698 10/06/98
TDS	mg/L	NA	219	437	256	274	10.0 U	173
Ammonia, dissolved	mg/L	NA	0.15	0.28	0.35	0.10 U	0.10 U	0.17
DOC	mg/L	NA	0.41	2.2	0.54	0.82	1.0	0.49

Analyte	Units	NJDEP Groundwater Quality Criteria	9812567 29BR-100998 10/09/98	9812681 30BR-101398 10/13/98	9812523 31BR-100898 10/08/98	9812679 33BR-101398 10/13/98	9812412 MW34BR-100798 10/07/98	9812819 35BR101598 10/15/98
TDS	mg/L	NA	218	287	448	288	200	1.8
Ammonia, dissolved	mg/L	NA	0.10 U	0.21	0.10	0.11	0.12	0.26
DOC	mg/L	NA	0.72	2.2	0.77	1.3	0.62	10.0 U

TABLE 3 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR GENERAL CHEMISTRY PARAMETERS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812759 36BR-101498 10/14/98	9812359 37BR-100698 10/06/98	9812682 38BR-101398 10/13/98	9812527 39BR-100898 10/08/98	9812532 40BR-100898 10/08/98	9812565 41BR-100998 10/09/98
TDS	mg/L	NA	233	141	290	92.0	169	242
Ammonia, dissolved	mg/L	NA	0.11	0.17	0.25	0.10 U	0.11	0.10 U
DOC	mg/L	NA	1.4	0.20	1.4	0.79		0.98

Analyte	Units	NJDEP Groundwater Quality Criteria	9812528 42BR-100898 10/08/98	9812591 43BR-101298 10/12/98	9812592 44BR-101298 10/12/98	9812760 45BR-101498 10/14/98	9812761 45BR-101498DUP3 10/14/98	9812594 46BR-101298 10/12/98
TDS	mg/L	NA	166	1510	330	219	221	313
Ammonia, dissolved	mg/L	NA	0.12	0.37	0.39	0.18	0.11	0.67
DOC	mg/L	NA	0.71	3.7	2.1	0.65	0.66	2.1

Analyte	Units	NJDEP Groundwater Quality Criteria	9812529 47BR-100898 10/08/98	9812562 48BR-100998 10/09/98	9812595 49BR-101298 10/12/98	9812754 50BR-101498 10/14/98	9812758 50BR-101498DUP4 10/14/98	9812417 51BR-100798 10/07/98
TDS	mg/L	NA	310	200	182	210	181	190
Ammonia, dissolved	mg/L	NA	0.15	0.10	0.17	0.10 U	0.10 U	0.11
DOC	mg/L	NA	3.9	0.60	0.66	0.57	0.39	0.72

Analyte	Units	NJDEP Groundwater Quality Criteria	9812418 51BR-100798DUP1 10/07/98	9812313 11MW1-100598 10/05/98	9812589 35MW1-101298 10/12/98	9812590 35MW2-101298 10/12/98	9812683 BRP1-101398 10/13/98	9812563 BRP2-100998 10/09/98
TDS	mg/L	NA	185		257	182	325	522
Ammonia, dissolved	mg/L	NA	0.26	0.17	0.21	0.10	0.19	0.18
DOC	mg/L	NA	0.71		0.98	0.65	2.8	7.4

TABLE 3 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR GENERAL CHEMISTRY PARAMETERS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812531 BRP-3-100898 10/08/98	9812415 12S-100798 10/07/98	9812570 31S-100998 10/09/98	9812680 32S-101398 10/13/98	9812684 32S-101398DUP2 10/13/98	9812311 37S-10/5/98 10/05/98
TDS	mg/L	NA	350	210	114	290	290	1020
Ammonia, dissolved	mg/L	NA	0.14	0.21	0.35	0.12	0.25	0.10 U
DOC	mg/L	NA	3.4	3.2	2.8	2.8	2.7	0.24

Analyte	Units	NJDEP Groundwater Quality Criteria	9812856 WD-101698 10/16/98	9812309 FB-1 10/05/98	9812355 FB2-100698 10/06/98	9812411 FB3-100798 10/07/98	9812525 FB4-100898 10/08/98	9812588 FB5-101298 10/12/98
TDS	mg/L	NA	364	10.0	29.0	30.0	287	41.0
Ammonia, dissolved	mg/L	NA	0.28	0.28	0.16	0.11	0.10 U	0.21
DOC	mg/L	NA	2.8	0.81	0.20 U	0.20 U	0.86	0.20 U

Analyte	Units	NJDEP Groundwater Quality Criteria	9812678 FB7-101398 10/13/98	9812753 FB8-101498 10/14/98	9812827 FD9101598 10/15/98
TDS	mg/L	NA	10.0 U	13.0	0.51
Ammonia, dissolved	mg/L	NA	0.13	0.20	0.11
DOC	mg/L	NA	0.24	0.43	10.0 U

TABLE 4
SUMMARY OF GROUND-WATER ANALYSES FOR THE ANIONS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812414 02BR-100798 10/7/98		9812312 03BR-100598 10/5/98		9812312DL 03BR-100598 10/6/98		9812571 04BR-100998 10/09/98		9812571DL 04BR-100998DL 10/09/98		9812757 5BR-101498 10/14/98		9812757DL 5BR-101498DL 10/14/98	
Chloride	mg/L	250	7.6		64		6.7	D	42	E	40	D	25	E	24	D
Nitrogen, nitrate	mg/L	10	0.10	U	0.27		0.27	D	0.10	U	0.50	U	2.5		2.3	D
Sulfate	mg/L	250	3.3		27	E	25	D	91	E	86	D	56	E	52	D

Analyte	Units	NJDEP Groundwater Quality Criteria	9812419 MW6BR-100798 10/7/98		9812419DL MW6BR-100798 10/7/98		9812530 07BR-100898 10/08/98		9812530DL 07BR-100898DL 10/08/98		9812569 08BR-100998 10/09/98		9812569DL 08BR-100998DL 10/09/98		9812416 9BR-100798 10/7/98	
Chloride	mg/L	250	8.9		9.1	D	85	E	84	D	11		11	D	21	E
Nitrogen, nitrate	mg/L	10	0.10	U	0.20	U	0.10	U	0.50	U	0.10	U	0.20	U	0.10	U
Sulfate	mg/L	250	36	E	34	D	9.2		8.7	D	21	E	20	D	0.46	

Analyte	Units	NJDEP Groundwater Quality Criteria	9812416DL 9BR-100798DL 10/7/98		9812360 11BR-100698 10/6/98		9812360DL 11BR-100698DL 10/6/98		9812413 12BR-100798 10/7/98		9812564 15BR-100998 10/09/98		9812564DL 15BR-100998DL 10/09/98		9812756 16BR-101498 10/14/98	
Chloride	mg/L	250	21	D	7.2		7.1	D	4.2		63	E	61	D	37	E
Nitrogen, nitrate	mg/L	10	0.20	U	1.7		1.5	D	0.80		0.10	U	0.50	U	0.10	U
Sulfate	mg/L	250	0.53	D	21	E	19	D	17		21	E	19	D	29	E

Analyte	Units	NJDEP Groundwater Quality Criteria	9812756DL 16BR-101498DL 10/14/98		9812357 19BR-100698 10/6/98		9812755 20BR-101498 10/14/98		9812755DL 20BR-101498DL 10/14/98		9812356 21BR-100698 10/6/98		9812356DL 21BR-100698 10/6/98		9812568 22BR-100998 10/09/98	
Chloride	mg/L	250	39	D	2.9		71	E	70	D	54	E	50	D	33	E
Nitrogen, nitrate	mg/L	10	0.20	U	0.29		0.10	U	0.50	U	2.3		2.1	D	2.2	
Sulfate	mg/L	250	29	D	19		13		12	D	19		17	D	49	E

TABLE 4 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR THE ANIONS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812568DL 22BR-100998DL 10/09/98		9812526 27BR-100898 10/08/98		9812358 28BR-100698 10/6/98		9812358DL 28BR-100698DL 10/6/98		9812567 29BR-100998 10/09/98		9812681 30BR-101398 10/13/98		9812681DL 30BR-101398DL 10/13/98	
Chloride	mg/L	250	32	D	8.4		14		14	D	6.9		50	E	49	D
Nitrogen, nitrate	mg/L	10	2.1	D	0.10	U	2.9		2.7	D	0.10	U	0.10	U	0.50	U
Sulfate	mg/L	250	45	D	19		43	E	41	D	18		12		12	D

Analyte	Units	NJDEP Groundwater Quality Criteria	9812523 31BR-100898 10/8/98		9812679 33BR-101398 10/13/98		9812679DL 33BR-101398DL 10/13/98		9812412 MW34BR-100798 10/0/798		9812412DL MW34BR-100798DL 10/7/98		9812819 35BR-101598 10/15/98		9812759 36BR-101498 10/14/98	
Chloride	mg/L	250	8.7		19		19	D	13		13	D	6.1		15	
Nitrogen, nitrate	mg/L	10	0.10	U	0.10	U	0.20	U	3.5		3.2	D	1.9		0.10	U
Sulfate	mg/L	250	18		26	E	25	D	54	E	50	D	15		28	E

Analyte	Units	NJDEP Groundwater Quality Criteria	9812759DL 36BR-101498DL 10/14/98		9812359 37BR-100698 10/6/98		9812359DL 37BR-100698DL 10/6/98		9812682 38BR-101398 10/13/98		9812682DL 38BR-101398DL 10/13/98		9812527 39BR-100898 10/08/98		9812532 40BR-100898 10/08/98	
Chloride	mg/L	250	14	D	4.1		4.5	D	45	E	46	D	4.6		9.9	
Nitrogen, nitrate	mg/L	10	0.20	U	0.10	U	0.20	U	0.10	U	0.50	U	0.10	U	0.10	U
Sulfate	mg/L	250	26	D	28	E	27	D	20		19	D	8.8		23	E

Analyte	Units	NJDEP Groundwater Quality Criteria	9812532DL 40BR-100898DL 10/08/98		9812565 41BR-100998 10/09/98		9812565DL 41BR-100998DL 10/09/98		9812528 42BR-100898 10/08/98		9812591 43BR-101298 10/12/98		9812591DL 43BR-101298DL 10/12/98		9812592 44BR-101298 10/12/98	
Chloride	mg/L	250	10	D	31	E	32	D	2.9		70	E	72		7.1	
Nitrogen, nitrate	mg/L	10	0.20	U	0.11		0.20	U	0.10	U	0.20	U	0.50	U	0.20	U
Sulfate	mg/L	250	22	D	28	E	27	D	6.4		1.7		1.6		38	

TABLE 4 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR THE ANIONS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812760 45BR-101498 10/14/98		9812760DL 45BR-101498DL 10/14/98		9812761 45BR-101498DUP3 10/14/98		9812761DL 45BR-101498DUP3DL 10/14/98		9812594 46BR-101298 10/12/98		9812529 47BR-100898 10/08/98		9812529DL 47BR-100898DL 10/08/98	
Chloride	mg/L	250	12		12	D	12		12	D	9.0		22	E	23	D
Nitrogen, nitrate	mg/L	10	0.10	U	0.20	U	0.10	U	0.20	U	0.20	U	0.10	U	0.20	U
Sulfate	mg/L	250	29	E	28	D	29	E	28	D	7.1		7.1		7.2	D

Analyte	Units	NJDEP Groundwater Quality Criteria	9812562 48BR-100998 10/09/98		9812595 49BR-101298 10/12/98		9812754 50BR-101498 10/14/98		9812754DL 50BR-101498DL 10/14/98		9812758 50BR-101498DUP4 10/14/98		9812758DL 50BR-101498DUP4DL 10/14/98		9812417 51BR-100798 10/7/98	
Chloride	mg/L	250	6.6		5.8		6.2		7.1	D	6.2		6.7	D	6.2	
Nitrogen, nitrate	mg/L	10	0.10	U	0.10	U	0.19		0.20	U	0.18		0.20	U	0.52	
Sulfate	mg/L	250	17		14		31	E	30	D	31	E	30	D	22	E

Analyte	Units	NJDEP Groundwater Quality Criteria	9812417DL 51BR-100798DL 10/7/98		9812418 51BR-100798DUP1 10/7/98		9812418DL 51BR-100798DUP1DL 10/7/98		9812313 11MW1-100598 10/5/98		9812313DL 11MW1-100598 10/6/98		9812589 35MW1-101298 10/12/98		9812589DL 35MW1-101298DL 10/12/98	
Chloride	mg/L	250	6.4	D	6.1		6.5	D	7.0		7.3	D	59	E	57	D
Nitrogen, nitrate	mg/L	10	0.52	D	0.56		0.53	D	2.1		2.0	D	2.3		2.3	D
Sulfate	mg/L	250	21	D	22	E	21	D	22	E	20	D	55	E	50	D

Analyte	Units	NJDEP Groundwater Quality Criteria	9812590 35MW2-101298 10/12/98		9812590DL 35MW2-101298DL 10/12/98		9812683 BRP1-101398 10/13/98		9812683DL BRP1-101398DL 10/13/98		9812563 BRP2-100998 10/09/98		9812563DL BRP2-100998DL 10/09/98		9812531 BRP-3-100898 10/08/98	
Chloride	mg/L	250	62	E	61	D	34	E	35	D	150	E	150	D	27	E
Nitrogen, nitrate	mg/L	10	1.6		1.6	D	0.10	U	0.20	U	0.10	U	1.0	U	3.4	
Sulfate	mg/L	250	23	E	22	D	31	E	30	D	2.1		3.0	D	77	E

TABLE 4 (continued)
SUMMARY OF GROUND-WATER ANALYSES FOR THE ANIONS
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

Analyte	Units	NJDEP Groundwater Quality Criteria	9812531DL BRP-3-100898DL 10/08/98		9812856 WD-101698 10/16/98		9812856DL WD-101698DL 10/16/98		9812415 12S-100798 10/7/98		9812570 31S-100998 10/09/98		9812570DL 31S-100998DL 10/09/98		9812680 32S-101398 10/13/98	
Chloride	mg/L	250	26	D	52	E	54	D	17		14		14	D	20	E
Nitrogen, nitrate	mg/L	10	3.1	D	0.23		1.0	U	0.10	U	0.10	U	0.20	U	0.18	
Sulfate	mg/L	250	71	D	120	E	110	D	5.7		21	E	20	D	30	E

Analyte	Units	NJDEP Groundwater Quality Criteria	9812680DL 32S-101398DL 10/13/98		9812684 32S-101398DUP2 10/13/98		9812684DL 32S-101398DUP2DL 10/13/98		9812311 37S-10/5/98 10/5/98		9812311DL 37S-10/5/98 10/6/98		9812309 FB-1 10/5/98		9812355 FB2-100698 10/6/98	
Chloride	mg/L	250	20	D	18		18	D	490	E	**440**	**D**	0.10	U	0.10	U
Nitrogen, nitrate	mg/L	10	0.20	U	0.10	U	0.20	U	2.7		2.5	U	0.10	U	0.10	U
Sulfate	mg/L	250	27	D	31	E	30	D	14		16	D	0.10	U	0.10	U

Analyte	Units	NJDEP Groundwater Quality Criteria	9812411 FB3-100798 10/7/98		9812525 FB4-100898 10/08/98		9812588 FB5-101298 10/12/98		9812678 FB7-101398 10/13/98		9812753 FB8-101498 10/14/98		9812827 FB9-101598 10/15/98	
Chloride	mg/L	250	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
Nitrogen, nitrate	mg/L	10	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
Sulfate	mg/L	250	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U

TABLE 5
FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

WELL I.D.	DATE AND TIME	pH	TEMPERATURE (C)	CONDUCTIVITY (umhos/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTU)	Eh (mv)
2BR	10/07/98 1136	6.48	14.7	0.290	0.41	0.0	-46.2
3BR	10/05/98 1740	7.19	15.5	0.236	0.43	1.0	-7.0
4BR	10/09/98 1229	7.45	18.8	0.460	1.01	2.0	7.2
5BR	10/14/98 1324	6.77	15.3	0.389	0.57	1.0	-112.9
6BR	10/07/98 1630	7.50	14.7	0.250	0.68	0.0	23.0
7BR	10/08/98 1405	6.65	17.3	0.494	0.05	0.0	-131.9
8BR	10/09/98 1004	7.43	16.1	0.359	0.85	2.0	-19.6
9BR	10/07/98 1500	7.75	17.6	0.325	0.05	8.0	-161.4
11BR	10/06/98 1643	6.05	13.5	0.150	4.86	2.0	167.8
12BR	10/07/98 1435	7.05	13.9	0.207	0.79	3.0	39.9
15BR	10/09/98 1102	6.80	15.8	0.504	1.93	0.0	NS
16BR	10/14/98 1356	7.50	17.8	0.490	1.51	5.0	-6.8
19BR	10/06/98 1040	7.13	13.5	0.216	0.47	5.0	101.9
20BR	10/14/98 1019	6.58	16.5	0.461	-0.06	0.0	-107.3
21BR	10/06/98 1343	5.84	15.7	0.294	-0.08	1.0	78.6
22BR	10/09/98 1234	6.85	15.7	0.457	1.37	0.0	61.8
24BR	10/13/98	NS	NS	NS	NS	NS	NS
25BR	10/13/98	NS	NS	NS	NS	NS	NS
27BR	10/08/98 1055	7.55	17.6	0.242	0.04	0.0	195.5
28BR	10/05/98 1113	7.20	16.4	0.377	1.64	0.0	48.0
29BR	10/09/98 1114	7.75	16.1	0.330	0.82	2.0	7.4
30BR	10/13/98 1205	6.70	17.9	0.485	0.56	4.0	-116.2
31BR	10/08/98 0913	6.39	16.9	0.318	0.36	1.0	5.1
33BR	10/13/98 1058	7.43	15.0	0.467	2.02	1.0	-61.7
34BR	10/07/98 1435	7.05	13.9	0.207	0.79	3.0	39.9
35BR	10/15/98 1153	6.89	14.6	0.199	1.53	12.0	-16.3
36BR	10/14/98 1450	7.13	17.8	0.278	1.43	0.0	-115.4
37BR	10/06/98 1455	6.87	14.9	0.230	0.06	0.0	14.0
38BR	10/13/98 1600	7.09	16.3	0.482	-0.07	-9.0	-173.8
39BR	10/08/98 1102	7.88	17.4	0.279	0.27	0.0	-169.1
40BR	10/08/98 1700	7.49	15.3	0.299	0.51	115.0	-121.6
41BR	10/09/98 1007	6.81	16.4	0.382	3.45	0.0	NS
42BR	10/08/98 1118	9.22	16.8	0.346	0.05	0.0	-122.0
43BR	10/12/98 0945	10.88	14.7	1.520	10.98	125.0	-107.2
44BR	10/12/98 1125	10.12	16.4	0.575	11.29	2.0	-50.2
45BR	10/14/98 1555	7.57	14.2	0.331	1.18	-8.0	-46.0
46BR	10/12/98 1650	11.60	16.6	1.210	0.83	16.0	-51.6
47BR	10/08/98 1230	6.38	20.4	0.482	0.42	2.0	-115.4
48BR	10/09/98 0912	6.04	14.9	0.293	2.30	0.0	NS
49BR	10/12/98 1723	7.19	19.0	0.243	0.19	9.0	-39.9
50BR	10/14/98 1021	7.30	13.9	0.300	0.46	-4.0	-124.8
51BR	10/07/98 1528	7.80	16.7	0.262	0.86	6.0	36.6
11-MW-1	10/05/98 1410	5.07	21.7	0.123	2.86	16.0	125.8
35-MW-1	10/12/98 1329	5.41	16.8	0.345	1.23	91.0	243.1
35-MW-2	10/12/98 1116	5.54	15.0	0.284	2.09	36.0	224.7
BRP1	10/13/98 1430	6.18	18.6	0.567	0.87	3.0	-117.8
BRP2	10/09/98 1220	6.45	15.2	0.792	0.10	-10.0	NS

TABLE 5 (continued)
FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING
OCTOBER 1998 MONITORING WELL SAMPLING
NAWC, TRENTON

WELL I.D.	DATE AND TIME	pH	TEMPERATURE (C)	CONDUCTIVITY (umhos/cm)	DISSOLVED OXYGEN (mg/L)	TURBIDITY (NTU)	Eh (mv)
BRP3	10/08/98 1539	7.77	16.4	0.475	0.11	48.0	-86.1
W DITCH WELL	10/16/98 1050	6.72	15.7	0.566	2.07	9.0	-54.2
2S	ABANDONED	NS	NS	NS	NS	NS	NS
12S	10/07/98 1100	6.03	19.2	0.439	2.92	1.0	19.8
31S	10/09/98 1110	6.29	18.5	0.305	1.57	121.0	27.2
32S	10/13/98 1246	6.30	17.8	0.429	1.79	2.0	145.8
37S	10/05/98 1740	5.02	19.5	1.510	2.24	3.0	234.8
41S	WELL DRY	NS	NS	NS	NS	NS	NS

TABLE 6
SUMMARY OF DATA QUALIFIERS FOR THE ANALYTICAL SUMMARY TABLE

DUP Duplicate field sample.
(1) Higher of PQLs and Ground Water Quality Criteria for 1,2-dichloroethene (trans-) is 100 ug/l. Criterion for 1,2-dichloroethene (cis-) is NJ Maximum Contaminant Level (MCL) as of 5 February 1997 of 70 ug/l.
(2) Criterion for xylenes (total) is NJ MCL as of 5 February 1997 of 1,000 ug/l.
(3) Criterion for 1,1-dichloroethane is NJ MCL as of 5 February 1997 of 50 ug/l.
(4) Criterion for methylene chloride is NJ MCL as of 5 February 1997 of 3 ug/l.
(5) Criterion for naphthalene is NJ MCL as of 5 February 1997 of 300 ug/l.
(6) Criterion for 1,1,2,2-tetrachloroethane is NJ MCL as of 5 February 1997 of 1 ug/l.
(7) NJDEP Surface Water Criterion for 1,3-dichloropropene (total), since no criterion is available for individual isomers.
NA No available NJ criteria.
ND Not Detected.
NS Not Sampled.
TIC Tentatively Identified Compounds.

Organic Data Qualifiers

D Compounds identified at a secondary dilution factor
DL Identifies a sample which has been reanalyzed at a higher dilution factor
E Compounds whose concentrations exceed the calibration range of the GC/MS for that specific analysis; if one or more compounds have a response greater than the calibration range, the sample or extract is diluted and reanalyzed
J Estimated value
U Compound analyzed for but not detected

Inorganic Data Qualifiers

B Reported value is less than the CRDL, but greater than the IDL
E Reported value is estimated because of presence of interference
U Compound analyzed for but not detected (concentration is less than the IDL)

Notes
1. Ground-Water Quality Criteria is from NJDEP Ground-Water Quality Criteria for Class II-A Ground Water (N.J.A.C. 7:9-6). Unless otherwise noted, the criteria used are the Higher of Practical Quantitation Levels (PQLs) and Ground-Water Quality Criteria.
2. Analytes with concentrations greater than NJDEP Ground-Water Quality Criteria are highlighted in bold.

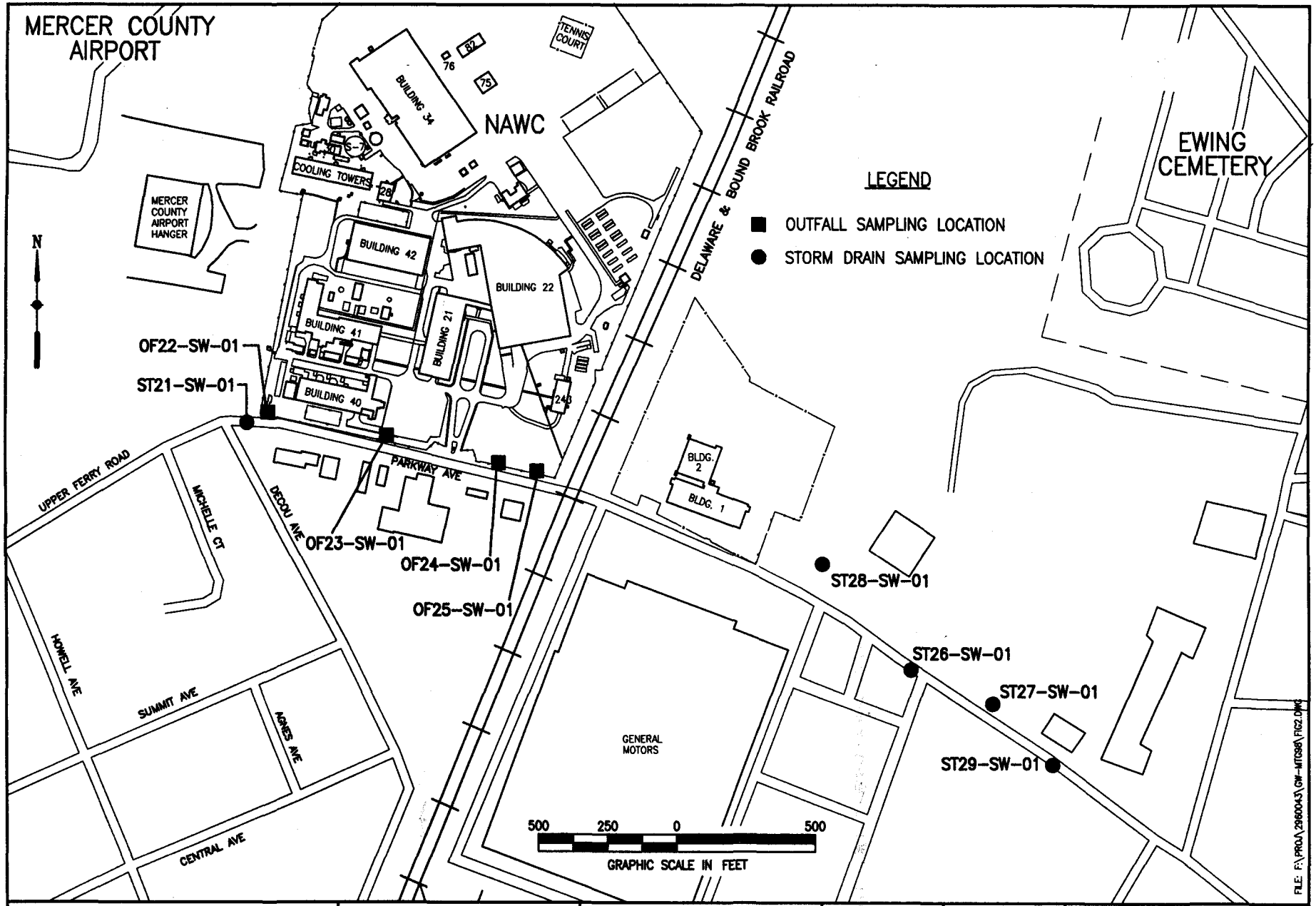
LEGEND

- ● OVERBURDEN MONITORING WELL
- ■ BEDROCK MONITORING WELL
- △ BEDROCK MONITORING WELL INSTALLED BETWEEN NOVEMBER 1996 AND MAY 1997 FOR FOCUSED FEASIBILITY STUDY

15BR MONITORING WELL SAMPLED

FILE: F:\PROJ\29600\43\GW-MTG98\DWG\FIG1.DWG

EA ENGINEERING, SCIENCE, AND TECHNOLOGY	NAWC – TRENTON TRENTON, NEW JERSEY	MONITORING WELL SAMPLE LOCATIONS 5 OCTOBER 1998 – 16 OCTOBER 1998	DESIGNED BY RAH	DRAWN BY SMD	DATE 7-23-98	PROJECT NO. 29600.43	FILE NAME FIG1
			CHECKED BY RAH	PROJECT MGR. SGF	SCALE 1"=250'	DRAWING NO. –	FIGURE 1



EA ENGINEERING, SCIENCE, AND TECHNOLOGY	NAWC – TRENTON TRENTON, NEW JERSEY	SITE LOCATION MAP FOR OUTFALL AND STORM DRAIN SAMPLE LOCATIONS	DESIGNED BY RAH	DRAWN BY FDV	DATE 7-24-98	PROJECT NO. 29600.43
			CHECKED BY RAH	PROJECT MGR. SGF	SCALE AS SHOWN	FIGURE 2

APPENDIX A

FIELD RECORDS OF WELL GAUGING, PURGING AND SAMPLING

- 1998/1997 [redacted] Sherri Allar Brian Andersen

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	02BR	WELL LOCK STATUS:	LOCKED
WELL CONDITION:	GOOD	WEATHER:	OVERCAST 65°
GAUGE DATE:	10-7/98	GAUGE TIME:	836
SOUNDING METHOD:	SLOPE INDICATOR	MEASUREMENT REF:	TOC
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	6"
PURGE DATE:	10/7/98	PURGE TIME:	846
PURGE METHOD:	LOW FLOW	FIELD PERSONNEL:	SAP BA
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0.9 End: 0.5

A. TOTAL WELL DEPTH (ft):	59	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	19	F. CASING VOLUME (GAL) (D*E):	40.35
C. DEPTH TO WATER (ft):	14.9	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	60.53
D. H_2O COLUMN(ft) (A-B-C):	26.9		

Parameter	Beginning	1	2	3	4	5
Time (min)	846	~~900~~ 1000	1005	1010	1015	1020
Depth to Water (ft)	14.9	22.75	21.50	20.59	19.34	18.59
Purge Rate (L/min)	1 gpm	0.3	0.3	0.4	0.4	0.4
Volume Purged (L)		—	1.5	3.5	5.5	7.5
pH		6.37	6.41	6.43	6.42	6.44
Temperature (°C)	Fast	14.4	14.5	14.5	14.5	14.6
Conductivity (mmhos/cm)	Purge	0.303	0.299	0.292	0.292	0.290
Dissolved Oxygen (mg/L)	0.2 ppm	0.19	0.51	0.42	0.42	0.50
Turbidity (NTU)	est 3 min	1	1	1	1	1
Eh (mv)		-73.9	-95.1	-108.3	-116.3	-130.3

TOTAL VOLUME WATER PURGED: 60 GAL + (37.5 LITERS * 0.264 GAL/LITER) = 69.9 GAL

SAMPLERS:	SAP BA	SAMPLING TIME (START/END):	1106 → 1136
SAMPLING DATE:	10/7/98	DECONTAMINATION FLUIDS USED:	DI H_2O, methanol
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCL, HNO_3, H_2SO_4, HgCl
SAMPLE BOTTLE IDs:	02BR-100798		
SAMPLE PARAMETERS:	VOC+10, TDS, DOC, Dissolved Alkalinity, dissolved metals, dissolved ammonia, inorganic ions, ~~SULFIDE, METHANE~~		
COMMENTS AND OBSERVATIONS:	Containerized purge water used disposed of at treatment plant.		

PUMP #: A9607.0084 - PUMP E ODOR: Yes, Hydrocarbon

LEVEL: 30 FT

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/7/98
Well ID: 02BR	Field Personnel: STP / BA	

Parameter	6	7	8	9	10	11
Time (min.)	1025	1030	1035	1040	1045	1050
Depth to Water (ft)	18.45	17.98	17.30	17.12	17.00	16.95
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	9.5	11.5	13.5	15.5	17.5	19.5
pH	6.45	6.44	6.43	6.44	6.43	6.41
Temperature (°C)	14.5	14.5	14.6	14.6	14.6	14.6
Conductivity (μmhos/cm)	0.286	0.283	0.276	0.274	0.273	0.278
Dissolved Oxygen (mg/L)	0.48	0.48	0.48	0.41	0.46	0.46
Turbidity (NTU)	1	0	0	0	0	0
Eh (mv)	-133.4	-134.9	-174.9	-231.5	-408	-183.1

Parameter	12	13	14	15	16	17
Time (min)	1055	1100	1105	1106	1136	
Depth to Water (ft)	16.82	16.80	16.78		17.45	
Purge Rate (L/min)	0.4	0.4	0.4		0.4	
Volume Purged (L)	21.5	23.5	25.5	Sampled @ 1106 Ended @ 1136	37.5	
pH	6.45	6.45	6.45		6.48	
Temperature (°C)	14.5	14.5	14.5		14.7	
Conductivity (μmhos/cm)	0.276	0.275	0.274		0.290 0.02	
Dissolved Oxygen (mg/L)	0.43	~~0.40~~ 0.41	0.40		0.40	
Turbidity (NTU)	0	0	0		0	
Eh (mv)	-170.7	-162.8	-163.7		-46.2	

COMMENTS AND OBSERVATIONS _____

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	03BR	WELL LOCK STATUS:	Not Locked
WELL CONDITION:	Good	WEATHER:	Sunny, 75°
GAUGE DATE:	10/5/98	GAUGE TIME:	1534
SOUNDING METHOD:	Interphase probe	MEASUREMENT REF:	TOC
STICK UP/DOWN (ft):	2.3	WELL DIAMETER (in.):	6"
PURGE DATE:	10/5/98	PURGE TIME:	1550
PURGE METHOD:	Low Flow	FIELD PERSONNEL:	BA/SAP
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	45	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	10	F. CASING VOLUME (GAL) (D*E):	25.74
C. DEPTH TO WATER (ft):	17.84	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	38.61
D. H_2O COLUMN(ft) (A-B-C):	17.16		

Parameter	Beginning	1	2	3	4	5
Time (min)	1550	1620	1625	1630	1635	1640
Depth to Water (ft)	17.84	18.8C	18.3C	18.28	18.23	18.28
Purge Rate (L/min)	26.P.01	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	X	30X	2.0	4.0	6.0	8.0
pH	Fast	6.36	6.46	6.36	6.34	6.45
Temperature (°C)	Purge	15.2 SAP 0.X3.2	16.1	16.2	16.5	16.5
Conductivity (mmhos/cm)		0.232	0,226	0.223	0.222	0.226
Dissolved Oxygen (mg/L)		0.40	0.41	0.42	0.37	0.37
Turbidity (NTU)		45	3	2	2	1
Eh (mv)		44.0	13.3	7.4	-9.2	-9.2

TOTAL VOLUME WATER PURGED: 72 GAL + (_____ LITERS * 0.264 GAL/LITER) = _____ GAL

SAMPLERS: BA/SAP

SAMPLING TIME (START/END): 1718 → 1740

SAMPLING DATE: 10/5/98

DECONTAMINATION FLUIDS USED: Methanol/DI/alconox

SAMPLE TYPE: Grab

SAMPLE PRESERVATIVES: H_2SO_4 / HCl / HNO_3 / $HgCl_2$

SAMPLE BOTTLE IDs: 03BR-100598

SAMPLE PARAMETERS: TDS; Dissolved metals, dissolved ammonia, dissolved organic carbon, Inorganic anions, VOA, methane, sulfide, alk.

COMMENTS AND OBSERVATIONS: _____

PUMP: 9649013 C

PUMP LEVEL: 23ft

ODOR: NONE

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/5/98
Well ID: 03BR	Field Personnel: BA/SAF	

Parameter	6	7	8	9	10	11
Time (min.)	1645	1650	1655	1700	1705	1708
Depth to Water (ft)	18.28	18.28	18.28	18.28	18.28	18.28
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	10.0	12.0	14.0	16.0	18.0	19.2
pH	6.55	6.61	6.64	6.67	6.69	6.68
Temperature (°C)	16.4	16.3	16.1	16.1	16.0	16.2
Conductivity (µmhos/cm)	0.230	0.231	0.232	0.232	0.232	0.231
Dissolved Oxygen (mg/L)	0.39	0.44	0.38	0.40	0.38	0.36
Turbidity (NTU)	1	1	1	1	1	1
Eh (mv)	-10.8	-17.0	-17.2	-20.8	-26.8	-26.8

Parameter	12	13	14	15	16	17
Time (min)	1714	1714	1717		1740	
Depth to Water (ft)	18.28	18.28	18.28		18.40	
Purge Rate (L/min)	0.4	0.4	0.4		0.4	
Volume Purged (L)	20.4	21.6	22.8		32	
pH	6.69	6.69	6.69		7.19	
Temperature (°C)	16.3	16.3	16.3	Sampled @ 1718 end 1740	15.5	
Conductivity (µmhos/cm)	0.229	0.229	0.229		0.236	
Dissolved Oxygen (mg/L)	0.40	0.40	0.40		0.43	
Turbidity (NTU)	1	1	1		1	
Eh (mv)	-31.2	-31.4	-32.6		-7.0	

COMMENTS AND OBSERVATIONS _____

~~4526/4650~~

Melissa Baden Page 1 of 2
Bethany Allen

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
WELL I.D.: 04BR
WELL CONDITION: good extraction well
PROJECT NUMBER: 29600.43
WELL LOCK STATUS: unlocked
WEATHER: raining 60-65°

GAUGE DATE: 100998
SOUNDING METHOD: water level meter
STICK UP/DOWN (ft): extraction well. Stick up is below grade.
GAUGE TIME: 1221
MEASUREMENT REF: TOC.
WELL DIAMETER (in.): 6"

PURGE DATE: 100998
PURGE METHOD: fast purge low flow
AMBIENT AIR VOCs (ppm) Start: 8.6 End: 32.0 then 0ppm
PURGE TIME: 1231
FIELD PERSONNEL: B. Allen / M. Baden
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 39
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): 7.4
D. H_2O COLUMN(ft) (A-B-C): 16.6
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 24.90
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 37.35
≈ 38 gal

Parameter	Beginning	1	2	3	4	5
Time (min)	1231	1307	1346	1351	1356	1401
Depth to Water (ft)	7.4	lost	7.4	7.4	7.4	7.4
Purge Rate (L/min)	4 liters/min or 1 gal/min → 38 gal or 40 gal total purged	flow	0.5	.5	.5	.5
Volume Purged (L)			2.5	5.0	7.5	10
pH			7.51	7.51	7.48	7.48
Temperature (°C)			18.0	17.9	18.0	18.0
Conductivity (µmhos/cm)			.4146	.451	.451	.451
Dissolved Oxygen (mg/L)			1.47	1.45	1.49	1.81
Turbidity (NTU)			17	9	9	9
Eh (mv)			79.6	8.10	8.11	8.01

TOTAL VOLUME WATER PURGED: 38 GAL + (24 LITERS * 0.264 GAL/LITER) = 44.33 GAL
SAMPLERS: BDA / MB
SAMPLING DATE: 100998
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: 04BR-100998
SAMPLING TIME (START/END): 1414/1429
DECONTAMINATION FLUIDS USED: Methanol + DI H_2O
SAMPLE PRESERVATIVES: $HgCl_2$, H_2SO_4, HCl, HNO_3, ZnAc, NaOH
SAMPLE PARAMETERS: VOC, TDS, Methane, DOC, Diss. Metals, Inorganic Anions, Alkalinity, Sulfide, Diss. Ammonia
COMMENTS AND OBSERVATIONS: When vault was cracked open, got readings of 32.0, so we "aired" vault out, stood upwind for 5-10 min. until readings read 0 ppm. Last flow at around 1307, so will purge to ≈ for a total of ≈ 40 gal.

PUMP #: Extraction well ODOR: NONE
LEVEL: —

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100998
Well ID: 04BR-100998	Field Personnel: B. Allen / M. Bader	

Post sample

Parameter	6	7	8	9	10	11
Time (min.)	1406	1411	1429			
Depth to Water (ft)	7.41	7.41	7.41			
Purge Rate (L/min)	.5	.5	.5			
Volume Purged (L)	12.5	15.0	24.0			
pH	7.50	7.48	7.45			
Temperature (°C)	18.0	18.0	18.8			
Conductivity (μmhos/cm)	.452	.452	.460			
Dissolved Oxygen (mg/L)	1.79	1.82	1.01			
Turbidity (NTU)	9	9	2			
Eh (mv)	8.10	8.12	7.2			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

27/8 Extraction Well

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 05BR
WELL LOCK STATUS: extraction well
WELL CONDITION: on 10/13/98 - leaky connection; on 10/14/98 - leak fixed
WEATHER: cloudy 60°

GAUGE DATE: 101498
GAUGE TIME: 1145
SOUNDING METHOD: water level meter
MEASUREMENT REF: TOC
STICK UP/DOWN (ft): extraction well
WELL DIAMETER (in.): 6"

PURGE DATE: 101498
PURGE TIME: 1200
PURGE METHOD: fast purge/low flow
FIELD PERSONNEL: B. Allen / M. Goldberg
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 86.3
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): ~~6.47~~ 6.56
D. H_2O COLUMN(ft) (A-B-C): ~~64.83~~ 64.74
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): ~~97.25~~ 97.11
G. 1.5 CASING VOLUMES (GAL) (F*1.5): ~~145.88~~ 145.66 ≈ 146 gal

Parameter	Beginning	1	2	3	4	5
Time (min)	1200	1230	1240	1245	1250	1255
Depth to Water (ft)	6.56	6.88	6.89	6.89	6.90	6.90
Purge Rate (L/min)	40 l/m or 5 gpm	5 gpm	0.3	0.3	0.3	0.3
Volume Purged (L)		150 total	3.0	4.5	6.0	7.5
pH			6.71	6.72	6.72	6.75
Temperature (°C)			14.8	14.8	15.3	15.3
Conductivity (mmhos/cm)			0.386	0.386	0.386	.386
Dissolved Oxygen (mg/L)			0.98	1.13	1.07	1.03
Turbidity (NTU)			8	8	5	5
Eh (mv)			-215.6	-198.4	-172.1	-188.0

TOTAL VOLUME WATER PURGED: 150 GAL + (10.5 LITERS * 0.264 GAL/LITER) = 152.77 GAL
SAMPLERS: BDA / MG
SAMPLING TIME (START/END): 1307 - 1324
SAMPLING DATE: 101498
DECONTAMINATION FLUIDS USED: Methanol DI Water
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: $HgCl_2$/HCl, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs: 05BR-101498
SAMPLE PARAMETERS: VOCs, TDS, Methane, Sulfide, Alkalinity, Diss Ammania, Diss Metals, Inorganic Anions, DOC
COMMENTS AND OBSERVATIONS: connection is leaking, Foster Wheeler to fix on 10/14/98. Connection fixed by Chuck Jones on 101498. no readings on PID. Purged for 30 minutes at 5 gpm for a total of 150 gallons.

PUMP #: EW
LEVEL: EW
ODOR: NONE

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101498
Well ID: 05BR	Field Personnel: BAllen m Goldberg	

post sample

Parameter	6	7	8	9	10	11
Time (min.)	~~1300 (1460)~~ 1500	1324				
Depth to Water (ft)	6.67	6.67				
Purge Rate (L/min)	0.3	0.3				
Volume Purged (L)	9.0	10.5				
pH	6.76	6.77				
Temperature (°C)	15.5	15.3				
Conductivity (μmhos/cm)	.386	0.389				
Dissolved Oxygen (mg/L)	1.09	0.57				
Turbidity (NTU)	5	1				
Eh (mv)	+172.1	-112.9				

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

0/10

Page 1 of 2

Melissa Dale
Amy Winkler

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	06BR	WELL LOCK STATUS:	USGS WATER LEVEL RECORD
WELL CONDITION:	GOOD	WEATHER:	COOL, CLOUDY, GOOS
GAUGE DATE:	10/7/98	GAUGE TIME:	15:20
SOUNDING METHOD:	WLI	MEASUREMENT REF:	TOP OF OUTER CASING
STICK UP/DOWN (ft):	UP	WELL DIAMETER (in.):	6"
PURGE DATE:	10/7/98	PURGE TIME:	15:30 -
PURGE METHOD:	FAST/LOW FLOW	FIELD PERSONNEL:	MRB/AIW
AMBIENT AIR VOCs (ppm)	Start: PID BROKEN End:	WELL MOUTH VOCs (ppm):	Start: PID BROKEN End:

A. TOTAL WELL DEPTH (ft):	77 ~~52.00~~	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	65.7
C. DEPTH TO WATER (ft):	8.20	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	98.55
D. H_2O COLUMN(ft) (A-B-C):	43.80		

Parameter	Beginning	1	2	3	4	5
Time (min)	15:30	15:50	16:55	16:00	16:05	16:10
Depth to Water (ft)	8.20		12.20	11.36	10.85	10.27
Purge Rate ~~(L/min)~~ gpm	5	1	1	1	1	0.5
Volume Purged ~~(L)~~ gal.		100	105	110	115	117.5
pH		7.35	7.38	7.41	7.45	7.46
Temperature (°C)		15.2	14.5	14.4	14.5	14.8
Conductivity (mmhos/cm)		0.254	0.250	0.250	0.250	0.251
Dissolved Oxygen (mg/L)		0.30	0.37	0.35	1.59	0.59
Turbidity (NTU)		3	3	1	1	1
Eh (mv)		49.0	34.6	32.8	49.2	18.9

TOTAL VOLUME WATER PURGED: _____ GAL + (_____ LITERS * 0.264 GAL/LITER) = 122.5 GAL

SAMPLERS:	MRB/AIW	SAMPLING TIME (START/END):	1620/1630
SAMPLING DATE:	10/7/98	DECONTAMINATION FLUIDS USED:	DI
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	Zn, Ac, $HgCl_2$, HNO_3, H_2SO_4, HCl,
SAMPLE BOTTLE IDs:	06BR-100798		
SAMPLE PARAMETERS:	VOA(8), DOC, Dissolved ammonia, dissolved metals, inorg. anions, TDS, methane		

COMMENTS AND OBSERVATIONS:

PUMP: C

ODOR: NONE

PUMP LEVEL: 49'

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/7/98
Well ID: 06BR	Field Personnel: AIW/MB	

AFTER SAMP.

Parameter	6	7	8	9	10	11
Time (min.)	16:15	16:20		16:30		
Depth to Water (ft)	10.02	9.89				
Purge Rate ~~(L/min)~~ gpm	0.5	0.5				
Volume Purged ~~(L)~~ g	120	122.5				
pH	7.45	7.42		7.50		
Temperature (°C)	14.8	14.7		14.7		
Conductivity (µmhos/cm)	0.251	0.251		0.250		
Dissolved Oxygen (mg/L)	0.55	0.54		0.68		
Turbidity (NTU)	1	0		0		
Eh (mv)	19.2	19.2		23.0		

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

64712 / 91350 Andy McBride Kim Shultz

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
WELL I.D.: 07BR
WELL CONDITION: Good
PROJECT NUMBER: 29600.43
WELL LOCK STATUS:
WEATHER: RAIN, 60's

GAUGE DATE: 10/8/98
SOUNDING METHOD: IFP
STICK UP/DOWN (ft): 0.5
GAUGE TIME:
MEASUREMENT REF: T.O.C.
WELL DIAMETER (in.): 6"

PURGE DATE: 10/8/98
PURGE METHOD: SLOW PURGE
AMBIENT AIR VOCs (ppm) Start: 00 End: 00
PURGE TIME: 1300
FIELD PERSONNEL: AM/K.S.
WELL MOUTH VOCs (ppm): Start: End:

A. TOTAL WELL DEPTH (ft): 53.5
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): 9.17
D. H_2O COLUMN(ft) (A-B-C): 29.33
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 44.0
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 66.0

Parameter	Beginning	1	2	3	4	5
Time (min)	1300	1322	1327	1336		
Depth to Water (ft)	9.17	9.60	[illegible]	[illegible]		
Purge Rate (L/min)	3.06PM	0.4LPM	0.4	[illegible]		
Volume Purged (L)	66.0	0	2.0	[illegible]		
pH		5.71	[illegible]	[illegible]		
Temperature (°C)		17.9	18.2	[illegible]		
Conductivity mhos/cm)		0.474	0.473	[illegible]		
Dissolved Oxygen (mg/L)		0.61	0.43	[illegible]		
Turbidity (NTU)		0	0	0		
Eh (mv)		108.8	[illegible]	[illegible]		

TOTAL VOLUME WATER PURGED: 66 GAL + (14 LITERS * 0.264 GAL/LITER) = 69.7 GAL
SAMPLERS: AM/KS
SAMPLING DATE: 10/8/98
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: 07BR-100898
SAMPLING TIME (START/END): 1405 – 1415
DECONTAMINATION FLUIDS USED: METHANOL/DI H_2O
SAMPLE PRESERVATIVES:
SAMPLE PARAMETERS: VOC, TDS, METHANE, DISSOLVED METALS, DISSOLVED AMMONIA, INORGANIC ANIONS, METHANE, SULFIDE
COMMENTS AND OBSERVATIONS: FAST PURGE @ 3.0 GPM / SLOW PURGE @ 0.4 LPM

PUMP #: A
LEVEL: 16ft
ODOR: None

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/8/98
Well ID: 07BR	Field Personnel: AM/KS	

Parameter	6	7	8	9	10	11
Time (min.)	1341	1348	1351	1356	1401	Post Sample
Depth to Water (ft)	9.59	9.57	9.55	9.46	9.40	9.48
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	6.0	8.0	10.0	12	14	–
pH	6.67	6.69	6.66	6.64	6.62	6.65
Temperature (°C)	18.7	17.6	17.5	17.4	17.4	17.3
Conductivity (μmhos/cm)	0.472	0.487	0.490	0.492	0.495	0.494
Dissolved Oxygen (mg/L)	1.52	0.11	0.09	0.07	0.08	0.05
Turbidity (NTU)	0	0	0	0	0	0
Eh (mv)	-100.4	-122	-124.6	-126.9	-127.5	-131.9

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

[redacted] Sherri Pullar
Brian Andersen

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	08BR	WELL LOCK STATUS:	LOCKED
WELL CONDITION:	GOOD	WEATHER:	OVERCAST, MISTING
GAUGE DATE:	10/9/98	GAUGE TIME:	822
SOUNDING METHOD:	Slope Indicator	MEASUREMENT REF:	TOP OF COVER
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	6"
PURGE DATE:	10/9/98	PURGE TIME:	840
PURGE METHOD:	LOW FLOW	FIELD PERSONNEL:	SAP/BA
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	57	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	41.48
C. DEPTH TO WATER (ft):	4.35	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	62.22
D. H_2O COLUMN(ft) (A-B-C):	27.65		

Parameter	Beginning	1	2	3	4	5
Time (min)	840	900	*~~905~~ 910	915	920	925
Depth to Water (ft)	4.35	6.72	5.40	5.25	5.25	5.25
Purge Rate (L/min)	1.6 gpm	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)		—	2.0	4.0	6.0	8.0
pH	Fast	6.07	6.09	6.57	6.87	7.00
Temperature (°C)	~~15.3~~	15.3	15.7	15.8	16.0	16.1
Conductivity (µmhos/cm)	Purge	0.376	0.371	0.358	0.357	0.358
Dissolved Oxygen (mg/L)		0.46	0.45	0.45	0.40	0.42
Turbidity (NTU)		1	1	1	0	0
Eh (mv)	~~280~~	29.0	-13.8	-18.3	-28.6	-33.0

TOTAL VOLUME WATER PURGED: 65 GAL + (23.6 LITERS * 0.264 GAL/LITER) = 71.2 GAL

SAMPLERS:	BA/SAP	SAMPLING TIME (START/END):	956 →
SAMPLING DATE:	10/9/98	DECONTAMINATION FLUIDS USED:	DI H_2O, Methanol
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	HCL, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs:	08BR-100998		

SAMPLE PARAMETERS: VOC+10, TDS, DOC, DISSOLVED INORGANIC ANIONS, ALKALINITY AMMONIA, METHANE, SULFIDE, DISSOLVED METALS

COMMENTS AND OBSERVATIONS: * Problem with turbidity had to clean probe.

Purged water was contained and disposed of at Treatment plant

PUMP #: —
LEVEL: —
ODOR: 559

855

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: ~~9/27~~ 10/9/98
Well ID: 08BR	Field Personnel: SAP/BA	

Parameter	6	7	8	9	10	11
Time (min.)	930	935	940	945	950	955
Depth to Water (ft)	5.20	~~5.08~~ 5.10	5.00	5.00	4.98	4.96
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	10.0	12.0	14.0	16.0	18.0	20.0
pH	7.08	7.15	7.20	7.24	7.26	7.28
Temperature (°C)	16.1	16.1	16.1	16.1	16.1	16.1
Conductivity (µmhos/cm)	0.359	0.358	0.358	0.358	0.358	0.359
Dissolved Oxygen (mg/L)	0.48	0.44	0.46	0.40	0.38	0.37
Turbidity (NTU)	0	0	0	0	0	0
Eh (mv)	-37.8	-42.2	-46.0	-50.8	-53.4	-55.6

Parameter	12	13	14	15	16	17
Time (min)	956	1004				
Depth to Water (ft)	4.96	4.96				
Purge Rate (L/min)	0.4	0.4				
Volume Purged (L)		23.6				
pH	Stabilized	7.43				
Temperature (°C)	Constant @ 956	16.1				
Conductivity (µmhos/cm)		0.359				
Dissolved Oxygen (mg/L)	End @	0.85				
Turbidity (NTU)		2				
Eh (mv)		-19.6				

COMMENTS AND OBSERVATIONS _____

35/37

Andy McBride
Line Sketch

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	09BR	WELL LOCK STATUS:	O.K.
WELL CONDITION:	Good	WEATHER:	Cloudy, 60's
GAUGE DATE:	10/7/98	GAUGE TIME:	1315
SOUNDING METHOD:	WATER LINE	MEASUREMENT REF:	T.O.C.
STICK UP/DOWN (ft):	2.5 Ft.	WELL DIAMETER (in.):	6"
PURGE DATE:	10/7/98	PURGE TIME:	60 MIN
PURGE METHOD:	FAST PURGE/SLOW PURGE	FIELD PERSONNEL:	AM/KS
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.0 End: 0.0

A. TOTAL WELL DEPTH (ft):	44	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	14.175
C. DEPTH TO WATER (ft):	9.55	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	21.2625
D. H_2O COLUMN(ft) (A-B-C):	9.45		

Parameter	Beginning	1	2	3	4	5
Time (min)	1329	1334	1339	1344	1349	1354
Depth to Water (ft)	7.25 (?)	7.33	7.41	7.54	7.76	7.83
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	0	2.0	4.0	6.0	8.0	10.0
pH	7.21	7.42	7.57	7.61	7.66	7.69
Temperature (°C)	17.0	16.8	16.9	17.3	17.3	17.3
Conductivity (µmhos/cm)	0.317	0.328	.329	0.324	.324	0.324
Dissolved Oxygen (mg/L)	0.98	0.54	0.62	0.27	0.06	0.00
Turbidity (NTU)	15	14	10	8	8	8
Eh (mv)	-215.8	-219.8	-222.1	-228.7	-239.4	-240.6

TOTAL VOLUME WATER PURGED: 21 GAL + (36 LITERS * 0.264 GAL/LITER) = 30.5 GAL

SAMPLERS:	AM/KS	SAMPLING TIME (START/END):	1440 - 1500
SAMPLING DATE:	10/7/98	DECONTAMINATION FLUIDS USED:	DI / METHANOL
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HNO_3 / H_2SO_4 / HCL / $HgCl_2$ / Ice
SAMPLE BOTTLE IDs:	9BR-100798		

SAMPLE PARAMETERS: VOC, INORGANIC ANIONS, TDS, DIS. AMMONIA, DISS. METALS, ALKALINITY, METHANE, SULFIDE, DOC

COMMENTS AND OBSERVATIONS: SET PUMP @ 14 Ft. / QUICK PURGE @ 2 GPM FOR 10+ MIN
SLOW PURGE @ 0.4 LPM

PUMP #: A
LEVEL: 14 Ft

ODOR: NONE

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/7/98
Well ID: 09 BR	Field Personnel: AM/KS	

Parameter	.6	7	8	9	10	11
Time (min.)	1359	1404	1409	1414	1419	1424
Depth to Water (ft)	7.83	7.98	8.03	7.98	7.96	7.90
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	12.0	14.0	16.0	18.0	20.0	22.0
pH	7.70	7.73	7.73	7.75	7.75	7.77
Temperature (°C)	17.4	17.5	17.5	17.5	17.5	17.5
Conductivity (μmhos/cm)	0.325	0.325	0.325	0.326	0.327	0.327
Dissolved Oxygen (mg/L)	0.08	0.04	0.01	0.01	0.01	0.01
Turbidity (NTU)	9	9	9	9	9	9
Eh (mv)	-244.0	-242.0	-238.6	-238.3	-239.6	-240.8

Parameter	12	13	14	15	16	17
Time (min)	1429	1500				
Depth to Water (ft)	7.91	8.53				
Purge Rate (L/min)	0.4	0.4				
Volume Purged (L)	24.0	36.0				
pH	7.77	7.75				
Temperature (°C)	17.7	17.6				
Conductivity (μmhos/cm)	0.327	0.325				
Dissolved Oxygen (mg/L)	0.01	0.05				
Turbidity (NTU)	8	8				
Eh (mv)	-241.3	-161.4				

COMMENTS AND OBSERVATIONS _____

33/33 Melissa Bader Bethany Allen

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 11BR
WELL LOCK STATUS: locked
WELL CONDITION: good
WEATHER: 70° sunny breezy

GAUGE DATE: 100698
GAUGE TIME: 1515
SOUNDING METHOD: interface probe
MEASUREMENT REF: Top of PVC casing
STICK UP/DOWN (ft): stick up
WELL DIAMETER (in.): 4"

PURGE DATE: 10/6/98
PURGE TIME: 1529 - fast purged for 14 minutes
PURGE METHOD: fast purge / low flow
FIELD PERSONNEL: MB/BA
AMBIENT AIR VOCs (ppm) Start: 9 ppm End: 0 ppm
WELL MOUTH VOCs (ppm): Start: 3.7 ppm End: 3.7 ppm

A. TOTAL WELL DEPTH (ft): 75
B. OPEN INTERVAL (ft): 20
C. DEPTH TO WATER (ft): BDM ~~55~~ 23.04
D. H_2O COLUMN(ft) (A-B-C): BDM ~~26.96~~ 31.96
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): BDM ~~17.52~~ 20.77
G. 1.5 CASING VOLUMES (GAL) (F*1.5): BDM ~~26.32~~ 31.16
≈27 gal

Parameter	Beginning	1	2	3	4	5
Time (min)	1529	1543	1548	1553	1558	1603
Depth to Water (ft)	23.04	23.66	23.40	23.36	23.39	23.70
Purge Rate (L/min)	2 gpm	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	28 gpm		1.5	3.0	4.5	6.0
pH			5.72	5.74	5.74	5.72
Temperature (°C)			14.6	14.8	14.9	15.0
Conductivity (mmhos/cm)			0.149	0.149	0.150	0.150
Dissolved Oxygen (mg/L)			4.93	5.03	5.06	4.99
Turbidity (NTU)			1	2	1	1
Eh (mv)			147.0	144.4	145.0	147.6

TOTAL VOLUME WATER PURGED: 28 GAL + (18 LITERS * 0.264 GAL/LITER) = 32.75 GAL
SAMPLERS: BA/MB
SAMPLING TIME (START/END): 1614 - 1643
SAMPLING DATE: 10/6/98
DECONTAMINATION FLUIDS USED: DI Water / Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: 1:1 HCl, HNO_3, H_2SO_4, HCl_2
SAMPLE BOTTLE IDs: 11BR-100698
SAMPLE PARAMETERS: VOCs+10, TDS, DOC, ~~Alkalinity~~, Inorganic Anions, ~~Methane, Sulfides~~, Dissolved Metals, Dissolved Ammonia
COMMENTS AND OBSERVATIONS: Set pump at 28 feet for fast purge, Set pump at 40 to 42 feet for low flow. At 1543, low flow at 0.3 liters per minute, Readings were stabilized after 15 minutes, We took 2 more readings

PUMP #: A
LEVEL: BDM ~~30~~ 28 feet for fast purge - 40 feet for low flow
DOR: None
H_2O qual. readings.

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100698
Well ID: 11BR	Field Personnel: Bethany Allen, Melissa Bader	

Parameter	6	7	8	9	10	11
Time (min.)	1608	1643				
Depth to Water (ft)	23.38	23.46				
Purge Rate (L/min)	0.3	0.3				
Volume Purged (L)	7.5	18.0				
pH	5.69	6.05				
Temperature (°C)	15.4	13.5				
Conductivity (μmhos/cm)	0.149	0.150				
Dissolved Oxygen (mg/L)	4.89	4.86				
Turbidity (NTU)	1	2				
Eh (mv)	151.3	167.8				

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

15/12 Melissa Baden
Amy Winkler

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
WELL I.D.: 12BR
WELL CONDITION: GOOD

PROJECT NUMBER: 29600.43
WELL LOCK STATUS: LOCKED
WEATHER: COOL, CLOUDY, 60's

GAUGE DATE: 10/7/98
SOUNDING METHOD: WLI
STICK UP/DOWN (ft): FLUSH

GAUGE TIME: 13:50
MEASUREMENT REF: TOP OF INNER CASING
WELL DIAMETER (in.): 6"

PURGE DATE: 10/7/98
PURGE METHOD: FAST
AMBIENT AIR VOCs (ppm) Start: PID NOT WORKING End: ____

PURGE TIME: 13:00 - 14:35
FIELD PERSONNEL: MRB/AIW
WELL MOUTH VOCs (ppm): Start: PID NOT WORKING End: ____

A. TOTAL WELL DEPTH (ft): 71.5 ~~76.5~~
B. OPEN INTERVAL (ft): 15.0
C. DEPTH TO WATER (ft): 19.53
D. H_2O COLUMN(ft) (A-B-C): 46.97
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 70.5
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 105.75

Parameter	Beginning	1	2	3	4	5
Time (min)	13:00	~~13:05~~	14:05	14:10	14:15	14:20
Depth to Water (ft)	19.53		28.59	27.86	27.06	26.85
Purge Rate (~~L/min~~) gpm	2 gpm	~~0.5~~ gpm	0.5 gpm	0.5	0.5	0.5
Volume Purged (~~L~~) gal.		106	108.5	111	113.5	116
pH	~~4.00~~	7.08	7.08	7.10	7.07	7.04
Temperature (°C)		14.4	14.5	14.0	13.9	13.8
Conductivity (~~µ~~mhos/cm)		0.210	0.208	0.209	0.209	0.209
Dissolved Oxygen (mg/L)		0.40	0.21	0.19	0.19	0.20
Turbidity (NTU)		9	9	7	7	5
Eh (mv)		11.0	6.0	3.8	5.0	5.0

TOTAL VOLUME WATER PURGED: 123.5 GAL + ~~LITERS * 0.264 GAL/LITER~~ = ~~GAL~~

SAMPLERS: MRB/AIW
SAMPLING DATE: 10/7/98
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: 12BR-100798
SAMPLE PARAMETERS: Volatiles, VOC, Dissolved ammonia, dissolved metals, inorganic anions, alkalinity, TDS, methane, sulfide

SAMPLING TIME (START/END): 14:25
DECONTAMINATION FLUIDS USED: DI/METHANOL
SAMPLE PRESERVATIVES: HCl, ZnAc, HNO_3, H_2SO_4, NaOH, $HgCl_2$

COMMENTS AND OBSERVATIONS:

PUMP #: B
LEVEL: 38'
ODOR: NONE

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date:
Well ID:	Field Personnel:	

Parameter	6	7	8	9	10	11
Time (min.)	14:35					
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH	7.05					
Temperature (°C)	13.9					
Conductivity (μmhos/cm)	0.207					
Dissolved Oxygen (mg/L)	0.79					
Turbidity (NTU)	3					
Eh (mv)	399 ~~[illegible]~~					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

25829 / 38,994

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 15BR
WELL LOCK STATUS: UNLOCKED
WELL CONDITION:
WEATHER: CLOUDY, 60'S

GAUGE DATE:
GAUGE TIME: N/A
SOUNDING METHOD: N/A
MEASUREMENT REF:
STICK UP/DOWN (ft):
WELL DIAMETER (in.): 6"

PURGE DATE:
PURGE TIME:
PURGE METHOD: N/A
FIELD PERSONNEL: AM/KS
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0.0
WELL MOUTH VOCs (ppm): Start: End:

A. TOTAL WELL DEPTH (ft): 41.0
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): N/A
D. H_2O COLUMN(ft) (A-B-C):
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): N/A
G. 1.5 CASING VOLUMES (GAL) (F*1.5):

Parameter	Beginning	1	2	3	4	5
Time (min)	0945	1102				
Depth to Water (ft)	N/A	N/A				
Purge Rate (L/min)						
Volume Purged (L)	↓	↓				
pH	6.80	6.80				
Temperature (°C)	15.9	15.8				
Conductivity (µmhos/cm)	0.496	0.504				
Dissolved Oxygen (mg/L)	1.91	1.93				
Turbidity (NTU)	0	0				
Eh (mv)	N/A	N/A				

TOTAL VOLUME WATER PURGED: N/A GAL + (N/A LITERS * 0.264 GAL/LITER) = N/A GAL
SAMPLERS: AM/KS
SAMPLING TIME (START/END): 1050-1100
SAMPLING DATE: 10/9/98
DECONTAMINATION FLUIDS USED: DI / METHANOL
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: HCL, HNO_3, H_2SO_4, $MgCl_2$
SAMPLE BOTTLE IDs: 15BR-100998
SAMPLE PARAMETERS: VOC, TDS, METHANE, DOC/DISS. AMMONIA, DISS. METALS, INORGANIC ANIONS, SULFIDE,
COMMENTS AND OBSERVATIONS: EXTRACTION WELL

PUMP #:
LEVEL:
ODOR:

EA Engineering, Science, and Technology

A. Winkler
M. Bader

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 16BR
WELL LOCK STATUS: locked
WELL CONDITION: Good
WEATHER: Sunny 60's 70's, clo.

GAUGE DATE: 101498
GAUGE TIME: 1155
SOUNDING METHOD: water level meter
MEASUREMENT REF: top of well casing
STICK UP/DOWN (ft): 3 feet
WELL DIAMETER (in.): 6"
EXTRACTION WELL

PURGE DATE: 101498
PURGE TIME: 1200
PURGE METHOD: Fastpage / low flow
FIELD PERSONNEL: A. Winkler / M Bader
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 65
B. OPEN INTERVAL (ft): 25
C. DEPTH TO WATER (ft): 7.85
D. H_2O COLUMN(ft) (A-B-C): 32.15
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 48.23
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 72.35
≈73

Parameter	Beginning	1	2	1248	4	5
Time (min)	1200	1238	1243	~~1258~~	1253	1258
Depth to Water (ft)	7.85	33.15	31.0	26.84	25.20	21.40
Purge Rate (L/min)	2.75 g/m	0.5 L/m	0.5	0.5	0.5	0.5
Volume Purged (L)	73 Gallons	2.5L	5.0	7.5	10.0	12.5
pH		7.23	7.31	7.35	7.36	7.37
Temperature (°C)		17.4	17.4	17.5	17.5	17.7
Conductivity (µmhos/cm)		.450	.450	.449	.450	.450
Dissolved Oxygen (mg/L)		2.50	2.52	2.09	1.82	1.55
Turbidity (NTU)		20	20	20	20	19
Eh (mv)		6.25	6.67	8.2	8.4	-24.8

TOTAL VOLUME WATER PURGED: 73 GAL + (41.5 LITERS * 0.264 GAL/LITER) 83.96 GAL
SAMPLERS: AW/MB AWinkler/MBader SAMPLING TIME (START/END): 1330/1356
SAMPLING DATE: 101498 DECONTAMINATION FLUIDS USED: DI Water - Methanol
SAMPLE TYPE: Grab SAMPLE PRESERVATIVES: HCl, HNO_3, H_2SO_4, $HgCl_2$, NaOH, Zn Ac
SAMPLE BOTTLE IDs: 16BR-101498
SAMPLE PARAMETERS: VOCs, TOS, Methane, Sulfide, DOC, Dissolved Metals, Dissolved Hardness, Alk
COMMENTS AND OBSERVATIONS: 1224 - Well Stopped Purging - Started flow @ 1225

PUMP #: Extraction Well ODOR: None
LEVEL:

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10 14 98
Well ID: 16BR-101498	Field Personnel: A. Winkler-M, Bak.	

Parameter	6	7	8	9	10	11
Time (min.)	1303	1308	1313	1318	1323	1328
Depth to Water (ft)	20.5	~~19.88~~	18.6	16.0	14.4	13.25
Purge Rate (L/min)	~~1.5~~ 0.5	0.5	0.5	0.5	0.5	0.5
Volume Purged (L)	15.0	17.5	20.0	22.5	25.0	27.5
pH	7.34	7.34	7.35	7.37	7.38	7.38
Temperature (°C)	17.5	17.5	17.6	17.9	17.9	18.0
Conductivity (μmhos/cm)	.458	.481	.483	.475	.476	.477
Dissolved Oxygen (mg/L)	1.49	1.15	1.02	.93	.94	.92
Turbidity (NTU)	11	8	2	0	0	0
Eh (mv)	-20.6	-20.4	-21.2	-39.8	-44.2	-45

Post Sample

Parameter	12	13	14	15	16	17
Time (min)	1356					
Depth to Water (ft)	11.86					
Purge Rate (L/min)	0.5					
Volume Purged (L)	~~16.0~~ 41.5					
pH	7.50					
Temperature (°C)	17.8					
Conductivity (μmhos/cm)	.490					
Dissolved Oxygen (mg/L)	1.51					
Turbidity (NTU)	5					
Eh (mv)	-6.8					

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 19BR
WELL LOCK STATUS: locked
WELL CONDITION: good
WEATHER: cold ≈ 55°

GAUGE DATE: 100698
GAUGE TIME: 0820
SOUNDING METHOD: water level meter
MEASUREMENT REF: TOC well (outside casing)
STICK UP/DOWN (ft): up
WELL DIAMETER (in.): 6"

PURGE DATE: 100698
PURGE TIME: 0835 (purged 52 min.)
PURGE METHOD: low blow
FIELD PERSONNEL: B Allen + M. Bader
AMBIENT AIR VOCs (ppm) Start: .9 ppm End: 1.0 ppm
WELL MOUTH VOCs (ppm): Start: .9 ppm End: 2.5 ppm

A. TOTAL WELL DEPTH (ft): 58.0
B. OPEN INTERVAL (ft): 15.0
C. DEPTH TO WATER (ft): 18.90
D. H_2O COLUMN(ft) (A-B-C): (BWH) ~~23.10~~ 24.10

E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): (BWH) ~~34.65~~ 36.15
G. 1.5 CASING VOLUMES (GAL) (F*1.5): (BWH) ~~51.98~~ 54.20
≈ 52 gal

Parameter	Beginning	1	2	3	4	5
Time (min)	0835	0927	0945	0950	0955	0900
Depth to Water (ft)	18.90	*	*—	19.75	19.79	19.71
Purge Rate (L/min)	2 L/m	0.5	0.5	0.5	0.5	0.5
Volume Purged (L)		52 gal total	4.0	6.5	9.0	11.5
pH			5.94	6.69	6.86	6.83
Temperature (°C)			13.5	13.8	13.8	13.8
Conductivity (mmhos/cm)			0.229	0.217	0.215	0.216
Dissolved Oxygen (mg/L)			0.91	0.49	0.47	0.70
Turbidity (NTU)			12	10	10	10
Eh (mv)			96.5	85.1	83.6	89.2

TOTAL VOLUME WATER PURGED: 52 GAL + (31.5 LITERS * 0.264 GAL/LITER) = 60.32 GAL
SAMPLERS: BA + MB
SAMPLING TIME (START/END): 1020 / 1040
SAMPLING DATE: 100698
DECONTAMINATION FLUIDS USED: Methanol DI
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl, H_2SO_4, HNO_3
SAMPLE BOTTLE IDs: 19BR-100698
SAMPLE PARAMETERS: VOC, methane, sulfide, alkalinity, DOC, Diss Metals, Dissolved Ammonia, TDS, Anions
COMMENTS AND OBSERVATIONS: AT 0835 purged at ≈2 liters/min or 1 gal per minute. Purged for 52 minutes, slowed rate to 0.5 L per minute at 0927.

* Water level meter broke.

PUMP: E
ODOR: none
PUMP LEVEL: ≈ 28 feet initially
53 feet at low flow.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/06/98
Well ID: 19BR	Field Personnel: Bethany Allen/Melissa Bader	

post sample

Parameter	6	7	8	9	10	11
Time (min.)	1005	1010	1015	1040		
Depth to Water (ft)	19.72	19.71	19.72	19.79		
Purge Rate (L/min)	0.5	0.5	0.5	0.5		
Volume Purged (L)	14.0	16.5	19.0	31.5		
pH	7.05	7.11	7.14	7.13		
Temperature (°C)	13.8	13.8	13.8	13.5		
Conductivity (mmhos/cm)	0.214	0.214	0.212	0.216		
Dissolved Oxygen (mg/L)	0.37	0.37	0.36	0.47 (SA)		
Turbidity (NTU)	10	9	9	5		
Eh (mv)	84.8	82.1	79.8	101.9		

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

20,190 / 20,234

1015 Horiba Calibration
#00110 Tub 0
pH 3.97
DO 8.40
Cond 4.50
temp 19.7

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	20BR	WELL LOCK STATUS:	bolted down
WELL CONDITION:	good	WEATHER:	sunny 65°
GAUGE DATE:	101498	GAUGE TIME:	N/A
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	N/A
STICK UP/DOWN (ft):	extraction well (pumping)	WELL DIAMETER (in.):	6"
PURGE DATE: (RAW)	101498	PURGE TIME:	1019
PURGE METHOD: ~~Bailer~~	low flow	FIELD PERSONNEL:	B. Allen / M. Gulberg
AMBIENT AIR VOCs (ppm)	Start: 2.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.0 End: 0.0

A. TOTAL WELL DEPTH (ft): 43
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): N/A
D. H_2O COLUMN(ft) (A-B-C): *Depth to water could not be obtained w/o slope indicator.

E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): —
G. 1.5 CASING VOLUMES (GAL) (F*1.5): —

Parameter	Beginning	1	2	3	4	5
Time (min)	1019	1055				
Depth to Water (ft)	—	sample taken				
Purge Rate (L/min)	—					
Volume Purged (L)	—					
pH	6.58					
Temperature (°C)	16.5					
Conductivity (µmhos/cm)	0.461					
Dissolved Oxygen (mg/L)	-0.06					
Turbidity (NTU)	0					
Eh (mv)	-107.3					

TOTAL VOLUME WATER PURGED: — GAL + (— LITERS * 0.264 GAL/LITER) = (25) GAL

SAMPLERS: BDA/MG
SAMPLING DATE: 101498
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: 20BR-101498
SAMPLING TIME (START/END): 1055-1104
DECONTAMINATION FLUIDS USED: ~~H_2SiCl_2, H_2SO_4, HNO_3, HCl, NaOH, Zn-Ac~~ Methanol / DI water
SAMPLE PREservatives:
SAMPLE PARAMETERS: VOC, TDS, Methane, DOC, Diss Ammonia, Diss. Metals, Inorg. Anions, Alkalinity, Sulfide
COMMENTS AND OBSERVATIONS: H_2S odors when water filled up drum. H_2O level meter did not work.

PUMP #: — EW
LEVEL: — EW
ODOR: H_2S odors

10/9

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 21OR
WELL LOCK STATUS: locked
WELL CONDITION: good
WEATHER: Sunny 65° windy
GAUGE DATE: 100698
GAUGE TIME: 1145
SOUNDING METHOD: water level meter
MEASUREMENT REF: top of out. well casing
STICK UP/DOWN (ft): stick up
WELL DIAMETER (in.): 6"
PURGE DATE: 100698
PURGE TIME: 1155 (Start purged for 40 min.)
PURGE METHOD: fast purge/low flow
FIELD PERSONNEL: B. Allen M. Bader
AMBIENT AIR VOCs (ppm) Start: 0 ppm End: 0 ppm
WELL MOUTH VOCs (ppm): Start: 5.4 ppm End: 5.4 ppm

A. TOTAL WELL DEPTH (ft): 65
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): 17.22
D. H_2O COLUMN(ft) (A-B-C): 32.78
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 49.17
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 73.75
≈ 74 gal

Parameter	Beginning	1	2	3	4	5
Time (min)	1155	1235	1245	1250	1255	1300
Depth to Water (ft)	17.22	17.36	17.77	17.84	17.87	17.87
Purge Rate (L/min)	8 L/m or 2 gpm	0.5	0.5	0.5	0.5	0.5
Volume Purged (L)	40 min @ 2 gpm = 80 gal total		5.0	7.5	10.0	12.5
pH			6.22	5.99	6.03	5.65
Temperature (°C)			16.5	16.1	16.0	15.9
Conductivity (µmhos/cm)			0.280	0.279	0.279	0.306
Dissolved Oxygen (mg/L)			0.81	0.19	-0.1	-0.05
Turbidity (NTU)			3	5	5	3
Eh (mv)			89.4	84.0	76.0	74.5

TOTAL VOLUME WATER PURGED: 80 GAL + (34 LITERS * 0.264 GAL/LITER) = 88.97 GAL
SAMPLERS: BA/MB
SAMPLING TIME (START/END): 1322/1343
SAMPLING DATE: 100698
DECONTAMINATION FLUIDS USED: Methanol + DI H_2O
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: H_2SO_4, HNO_3, $HgCl_2$, HCl
SAMPLE BOTTLE IDs: 21BR-100698
SAMPLE PARAMETERS: VOC, TDS, Methane, Sulfide, DOC, Inorg Anions, Dissolved Metals, Alkalinity, Dissolved Ammonia
COMMENTS AND OBSERVATIONS: Purge at 8 liters/minute or 2 gallons/minute. At 1235, changed flow to 0.5 liters/minute.

NOTE: negative DO readings, so we recalibrated.

PUMP #: C
ODOR: NO ODORS
LEVEL: 25 feet initially to purge — Level - 35 feet for Hi Quality readings

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100698
Well ID: 21BR	Field Personnel: Bethany Allen M. Butler	

Post Sample

Parameter	6	7	8	9	10	11
Time (min.)	1305	1310	1315	1343		
Depth to Water (ft)	17.85	17.87	17.8	18.43		
Purge Rate (L/min)	0.5	0.5	0.5	.5		
Volume Purged (L)	15.0	17.5	20.0	34.0		
pH	5.89	5.93	5.92	5.84		
Temperature (°C)	15.9	15.9	15.9	15.7		
Conductivity (mmhos/cm)	0.292	0.292	0.293	.294		
Dissolved Oxygen (mg/L)	-0.16	-0.17	-0.19	-.08		
Turbidity (NTU)	2	1	1	1		
Eh (mv)	72.4	68.1	61.7	78.6		

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

[redacted] 10/9/98 Sherri Pillar Brian Andersen

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 22BR
WELL LOCK STATUS: LOCKED
WELL CONDITION: GOOD
WEATHER: OVERCAST 65°

GAUGE DATE: 10/9/98
GAUGE TIME: 1140
SOUNDING METHOD: SLOPE INDICATOR
MEASUREMENT REF: TOP OF COVER
STICK UP/DOWN (ft): (circled)
WELL DIAMETER (in.): 6"

PURGE DATE: 10/9/98
PURGE TIME: 1143
PURGE METHOD: LOW FLOW
FIELD PERSONNEL: SAP/BA
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 49
B. OPEN INTERVAL (ft): 25
C. DEPTH TO WATER (ft): 6.97
D. H_2O COLUMN(ft) (A-B-C): 17.03
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 25.55
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 38.3

Parameter	Beginning	1	2	3	4	5	
Time (min)	1143	1214	1219	1224	1229	1234	1256
Depth to Water (ft)	6.97	7.32	7.30	7.25	7.20	7.15	7.15
Purge Rate (L/min)	1.5	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)		—	2.0	4.0	6.0	8.0	16.8
pH		7.19	7.01	6.91	6.87	6.85	6.83
Temperature (°C)		15.6	15.4	15.7	15.8	15.7	16.0
Conductivity (µmhos/cm)		0.455	0.456	0.457	0.457	0.457	0.45
Dissolved Oxygen (mg/L)		1.74	1.19	1.14	1.18	1.37	1.54
Turbidity (NTU)		3	1	1	0	0	1
Eh (mv)		73.0	62.2	59.6	60.2	61.8	57.4

TOTAL VOLUME WATER PURGED: 38 GAL + (16.8 LITERS * 0.264 GAL/LITER) = 42.4 GAL
SAMPLERS: SAP/BA
SAMPLING TIME (START/END): 1235 → 1256
SAMPLING DATE: 10/9/98
DECONTAMINATION FLUIDS USED: DI H_2O, Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs: 22BR-100998
SAMPLE PARAMETERS: VOCs HD, TOS, DOC, DISSOLVED METALS, Methane, Sulfide, Dissolved ammonia, DISSOLVED ANIONS, ALKALINITY,
COMMENTS AND OBSERVATIONS: @ 1157 flow stopped - flow started back up at 1209

PUMP #: —
LEVEL: —
ODOR:

[redacted]

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 24BR
WELL LOCK STATUS: LOCKED
WELL CONDITION: Good
WEATHER: Cloudy 65°F

GAUGE DATE: 10/13/98
GAUGE TIME: 1254
SOUNDING METHOD: IFP
MEASUREMENT REF: TOP OF CASING
STICK UP/DOWN (ft): ↑
WELL DIAMETER (in.): 8"

PURGE DATE: 10/13/98
PURGE TIME:
PURGE METHOD: Fast Purge/Low Flow
FIELD PERSONNEL: DA/RH/Am
AMBIENT AIR VOCs (ppm) Start: ____ End: ____
WELL MOUTH VOCs (ppm): Start: ____ End: ____

A. TOTAL WELL DEPTH (ft): 95
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): 7.28
D. H_2O COLUMN(ft) (A-B-C): 72.72
E. CASING VOLUME/FT (GAL): 2.6
F. CASING VOLUME (GAL) (D*E): 189.07
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 283.61

Parameter	Beginning	1	2	3	4	5
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

TOTAL VOLUME WATER PURGED: ____ GAL + (____ LITERS * 0.264 GAL/LITER) = ____ GAL

SAMPLERS: ____ SAMPLING TIME (START/END): ____
SAMPLING DATE: ____ DECONTAMINATION FLUIDS USED: ____
SAMPLE TYPE: ____ SAMPLE PRESERVATIVES: ____
SAMPLE BOTTLE IDs: ____
SAMPLE PARAMETERS: ____
COMMENTS AND OBSERVATIONS: Well Not Sampled -> Blocked @ ≈ 8' bgs → Hard bottom (cement or metal) w/ ≈ 1' of water @ bottom

PUMP #:
LEVEL:
ODOR:

~~7907~~ / 14,664 ;

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 25BR
WELL LOCK STATUS: locked-good
WELL CONDITION: good
WEATHER: cloudy, gray, 60s

GAUGE DATE: 101398
GAUGE TIME: 858
SOUNDING METHOD: interface probe
MEASUREMENT REF: top of PVC
STICK UP/DOWN (ft): flush
WELL DIAMETER (in.): 8"

PURGE DATE: 101398
PURGE TIME:
PURGE METHOD: fast purge/low flow
FIELD PERSONNEL: A. Winkler + M. Bader
AMBIENT AIR VOCs (ppm) Start: 0 End: 0.8
WELL MOUTH VOCs (ppm): Start: 108 End:

A. TOTAL WELL DEPTH (ft): 100
B. OPEN INTERVAL (ft): 25
C. DEPTH TO WATER (ft): 5.57
D. H_2O COLUMN(ft) (A-B-C): ~~74.34~~ 69.43
E. CASING VOLUME/FT (GAL): 2.6
F. CASING VOLUME (GAL) (D*E): 180.518
G. 1.5 CASING VOLUMES (GAL) (F*1.5): ≈270

Parameter	Beginning	1	2	3	4	5
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

TOTAL VOLUME WATER PURGED: _____ GAL + (_____ LITERS * 0.264 GAL/LITER) = _____ GAL
SAMPLERS: _____ SAMPLING TIME (START/END) : _____
SAMPLING DATE: _____ DECONTAMINATION FLUIDS USED: _____
SAMPLE TYPE: _____ SAMPLE PRESERVATIVES: _____
SAMPLE BOTTLE IDs: _____
SAMPLE PARAMETERS: _____
COMMENTS AND OBSERVATIONS: Well Could Not be Completed, due to Silt at 9.8 Feet Blocked Well

PUMP #: A ODOR: None
LEVEL: Attempted Level of Effort

Andy McBride
Kim Shirley

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
WELL I.D.: 27OR
WELL CONDITION: Good
PROJECT NUMBER: 29600.43
WELL LOCK STATUS: O.K.
WEATHER: Showers, 60's

GAUGE DATE: 10/8/98
SOUNDING METHOD: Water Level Indicator
STICK UP/DOWN (ft): 2.5 ft
GAUGE TIME: 0745
MEASUREMENT REF: T.O.C.
WELL DIAMETER (in.): 6"

PURGE DATE: 10/8/98
PURGE METHOD: Slow Purge
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0.0
PURGE TIME: 0755
FIELD PERSONNEL: AM/KS
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0.0

A. TOTAL WELL DEPTH (ft): 80
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): 10.42
D. H_2O COLUMN(ft) (A-B-C): 54.58
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 81.87
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 122.81

Parameter	Beginning	1	2	3	4	5
Time (min)	0755	0800	0805	0810	0840	1005
Depth to Water (ft)	10.42	28.56	41.40	47.50	54.95	59.29
Purge Rate (L/min)	5 GPM	4 GPM	2 GPM	0.5 GPM	0.5GPM	0.5GPM
Volume Purged (L)	30 GAL	25GAL	45 GAL	60 GAL	80 GAL	124GAL
pH	↓	↓	↓	↓	↓	↓
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

TOTAL VOLUME WATER PURGED: 124 GAL + (8 LITERS * 0.264 GAL/LITER) = 126.1 GAL

SAMPLERS: AM/KS
SAMPLING DATE: 10/8/98
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: 27OR-100898
SAMPLING TIME (START/END): 0755
DECONTAMINATION FLUIDS USED: DI/Methanol
SAMPLE PRESERVATIVES: HCL, HNO_3, H_2SO_4, $HgCl_2$
SAMPLE PARAMETERS: VOC's, TDS, DOC, Dissolved Metals, Inorganic Anions, Sulfide, Methane, Dissolved Argon
COMMENTS AND OBSERVATIONS: Quick Purged 124 Gal / Slow Purged @

PUMP #: A
LEVEL: 60 ft
ODOR: None

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/8/18
Well ID: 27BR	Field Personnel: AM/KS	

Parameter	6	7	8	9	10	11
Time (min.)	1010	1015	1020	1025	1030	1035
Depth to Water (ft)	57.94	59.34	59.32	59.29	59.28	59.27
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	0	1.0	2.0	3.0	4.0	5.0
pH	6.87	7.26	7.28	7.34	7.45	7.49
Temperature (°C)	16.2	16.2	17.1	17.2	17.2	17.3
Conductivity (µmhos/cm)	0.275	0.253	0.253	0.247	0.244	0.243
Dissolved Oxygen (mg/L)	0.54	0.02	0.01	0.11	0.11	0.12
Turbidity (NTU)	0	0	0	0	0	0
Eh (mv)	-164.0	-159.0	-170.5	-163.8	-177.7	-185.5

Parameter	12	13	14	15	16	17
Time (min)	1040	1045	1050	Post Sample		
Depth to Water (ft)	59.30	59.29	59.30	59.45		
Purge Rate (L/min)	0.2	0.2	0.2	0.2		
Volume Purged (L)	6.0	7.0	8.0	—		
pH	7.50	7.53	7.54	7.55		
Temperature (°C)	17.4	17.4	17.4	17.6		
Conductivity (µmhos/cm)	0.243	0.242	0.242	0.242		
Dissolved Oxygen (mg/L)	0.17	0.17	0.13	0.04		
Turbidity (NTU)	0	0	0	0		
Eh (mv)	-186.9	-189.7	-191.7	-195.5		

COMMENTS AND OBSERVATIONS _____

0/0 Sherri A. Pillar
Brian D. Andersen

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	28BR	WELL LOCK STATUS:	LOCKED
WELL CONDITION:	GOOD	WEATHER:	Sunny 60°
GAUGE DATE:	10/6/98	GAUGE TIME:	816
SOUNDING METHOD:	Interphase Probe	MEASUREMENT REF:	TOC
STICK UP/DOWN (ft):	2.60	WELL DIAMETER (in.):	6"
PURGE DATE:	10/6/98	PURGE TIME:	835
PURGE METHOD:	LOW FLOW	FIELD PERSONNEL:	DA/SAP
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	91	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	15	F. CASING VOLUME (GAL) (D*E):	97.85
C. DEPTH TO WATER (ft):	10.77	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	146.78
D. H_2O COLUMN(ft) (A-B-C):	65.23		

Parameter	Beginning	1	2	3	4	5
Time (min)	835	950	955	1000	1005	1010
Depth to Water (ft)	10.77	34.52	34.52	33.75	31.03	27.95
Purge Rate (L/min)	2 gpm	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)		—	2.0	4.0	6.0	8.0
pH		6.33	6.50	6.57	6.65	6.71
Temperature (°C)		14.2	14.2	14.1	14.1	14.2
Conductivity (μmhos/cm)	Fast	0.379	0.375	0.374	0.371	0.367
Dissolved Oxygen (mg/L)	Purge	1.71	1.74	1.53	1.65	1.80
Turbidity (NTU)		-10	-10	-10	-10	-10
Eh (mv)		~~6.04~~ 56.0	~~6.10~~ 55.6	54.2	44.8	35.6

TOTAL VOLUME WATER PURGED: 150 (150+) GAL + (33.2 LITERS * 0.264 GAL/LITER) = 158.8 GAL

SAMPLERS:	SAP/DA	SAMPLING TIME (START/END):	1056 → 1113
SAMPLING DATE:	10/6/98	DECONTAMINATION FLUIDS USED:	DI H2O, Methanol
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	HNO3, H2SO4, HCl
SAMPLE BOTTLE IDs:	28BR-100698		

SAMPLE PARAMETERS: 1565 Alkalinity, Sulfide, Inorganic Anions, Methane, TDS, VOC, Dissolved Metals, DOC, Dissolved [illegible]

COMMENTS AND OBSERVATIONS: Started at 5 g/3 min then increased to 2.5 g/min, started pump at 20 ft then lower to 30 ft, then to 50 ft

PUMP #: A106993 PUMP LEVEL: 50 ft

ODOR: NONE

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/5
Well ID: BR 28BR	Field Personnel: BA / SAP	

Parameter	6	7	8	9	10	11
Time (min.)	1015	1020	1025	1030 *	1035	1040
Depth to Water (ft)	25.95	24.40	22.00	21.18	20.20	19.28
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	10.0	12.0	14.0	16.0	18.0	20.0
pH	6.75	6.82	6.86	6.84	6.68	6.85
Temperature (°C)	14.8	14.7	15.3	15.4	15.5	15.7
Conductivity (µmhos/cm)	0.358	0.359	0.357	0.389	0.383	0.378
Dissolved Oxygen (mg/L)	1.76	1.96	1.66	1.80	1.67	1.48
Turbidity (NTU)	-10	-10	-10	*0	0	0
Eh (mv)	31.4	28.2	29.4	30.0	29.2	28.2

Parameter	12	13	14	15	16	17
Time (min)	1045	1050	1055		1113	
Depth to Water (ft)	18.68	18.18	17.70		16.45	
Purge Rate (L/min)	0.4	0.4	0.4		0.4	
Volume Purged (L)	22.0	24.0	26.0		33.2	
pH	6.97	7.02	7.03	Sampled @ 1056 end 1113	7.20	
Temperature (°C)	15.8	15.9	15.9		16.1	
Conductivity (µmhos/cm)	0.377	0.379	0.378		0.377	
Dissolved Oxygen (mg/L)	1.61	1.62	1.56		1.64	
Turbidity (NTU)	0	0	0		0	
Eh (mv)	26.6	26.0	26.2		48.0	

COMMENTS AND OBSERVATIONS * Changed baricles due to turbity readings

~~1455~~ /1734, Sherri Pillar
Brian Andersen

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	29BR	WELL LOCK STATUS:	LOCKED
WELL CONDITION:	GOOD	WEATHER:	OVERCAST, MISTY
GAUGE DATE:	10/9/98	GAUGE TIME:	824
SOUNDING METHOD:	SLOPE INDICATOR	MEASUREMENT REF:	TOP OF COVER
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	6"
PURGE DATE:	10/9/98	PURGE TIME:	840
PURGE METHOD:	LOW FLOW	FIELD PERSONNEL:	BA/SAP
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	100	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	15	F. CASING VOLUME (GAL) (D*E):	118.52
C. DEPTH TO WATER (ft):	5.99	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	177.78
D. H_2O COLUMN(ft) (A-B-C):	79.01		

Parameter	Beginning	1	2	3	4	5
Time (min)	840	*1019	1024	1029	1034	1039
Depth to Water (ft)	5.99	6.80	6.70	6.50	6.75	6.55
Purge Rate (L/min)	2.4 gpm	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)		—	1.5	3.0	4.5	6.0
pH		7.61	7.66	7.69	7.71	7.72
Temperature (°C)		16.0	16.0	16.0	16.0	16.0
Conductivity (µmhos/cm)	~~0.341~~	0.341	0.340	0.337	0.335	0.333
Dissolved Oxygen (mg/L)		0.42	0.38	0.38	0.37	0.36
Turbidity (NTU)		2	1	1	1	1
Eh (mv)		-42.2	-57.6	-69.8	-74.2	-78.8

TOTAL VOLUME WATER PURGED: 178 GAL + (16.2 LITERS * 0.264 GAL/LITER) = 182.3 GAL

SAMPLERS: BA/SAP
SAMPLING TIME (START/END): 1055 → 1114
SAMPLING DATE: 10/9/98
DECONTAMINATION FLUIDS USED: DI H_2O, Methanol
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: HCL, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs: 29BR - 100998
SAMPLE PARAMETERS: VOC+10, TDS, Dox, DISSOLVED AMMONIA, METHANE, SULFIDE, DISSOLVED METALS, INORGANIC ANIONS, ALKALINITY
COMMENTS AND OBSERVATIONS: Purged till 1005 then turned off for power turn off - Turned back on @ 1018

10 min

1 2/3 + 1 + 1

PUMP #: —
LEVEL: —
ODOR:

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/9/98
Well ID: 29BR	Field Personnel: SAP/BA	

Parameter	6	7	8	9	10	11
Time (min.)	1049	1049	1054	1055	1114	
Depth to Water (ft)	6.55	6.55	6.55	6.55	6.55	
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	
Volume Purged (L)	7.5	9.0	10.5	② 11.4	16.2	
pH	7.73	7.74	7.75	Sample @ 1055	7.75	
Temperature (°C)	16.0	16.0	16.0	② End Purge	16.1	
Conductivity (μmhos/cm)	0.332	0.332	0.331		0.330	
Dissolved Oxygen (mg/L)	0.37	0.36	0.37		0.82	
Turbidity (NTU)	1	1	1		2	
Eh (mv)	-82.2	-85.0	-87.5		7.40	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

~~1,300~~ 300 / 55,000

Brian Andersen
Andrew McBride

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	30BR	WELL LOCK STATUS:	Good
WELL CONDITION:	Good	WEATHER:	cloudy, cool
GAUGE DATE:	10/13/98	GAUGE TIME:	0815
SOUNDING METHOD:	Interface Probe	MEASUREMENT REF:	TOC (gutter steel pipe)
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	6"
PURGE DATE:	10/13/98	PURGE TIME:	0845
PURGE METHOD:	Fast/low flow	FIELD PERSONNEL:	BA, AM
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 1.2 End: 0.0

A. TOTAL WELL DEPTH (ft):	111.5	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	115.86
C. DEPTH TO WATER (ft):	9.26	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	173.79
D. H_2O COLUMN(ft) (A-B-C):	77.24		

Parameter	Beginning	1	2	3	4	5
Time (min)	0845	1115	1120	1125	1130	1135
Depth to Water (ft)		77.10	76.25	75.87	74.42	73.82
Purge Rate (L/min)	FAST 2.5-3gpm	.2	.2	.4	.2	.2
Volume Purged (L)		.4	1.4	3.4	4.4	5.4
pH		5.87	6.15	6.27	6.30	6.40
Temperature (°C)		16.3	16.1	16.2	16.5	16.6
Conductivity (µmhos/cm)		.532	.510	.505	.498	.495
Dissolved Oxygen (mg/L)		1.60	1.08	0.91	0.64	0.64
Turbidity (NTU)		0	3	3	3	3
Eh (mv)		-89.4	-112.6	-124.2	-127.2	-123.6

TOTAL VOLUME WATER PURGED: 174 GAL + (6.4 LITERS * 0.264 GAL/LITER) = 175.7 GAL

SAMPLERS:	AM, BA	SAMPLING TIME (START/END):	1143 - 1205
SAMPLING DATE:	10/13/98	DECONTAMINATION FLUIDS USED:	methanol / DI
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCL, HgCl, H_2SO_4, HNO_3
SAMPLE BOTTLE IDs:	30BR-101398		

SAMPLE PARAMETERS: VOC, ~~TDS~~, methane, DOC, Dissolved Ammonia, Dissolved Metals, Inorganic Anions, Alkalinity, Sulfide

COMMENTS AND OBSERVATIONS: start fast purge 2.5 gal/min - 0855 move pump to 50' (water depth 36' & dropping) - ~90 gal out; 0905 - water at 50' drop pump to 60' slow purge to 1 gal/min (80 gal purged so far). 0920 water level - 58' move pump to 70'; 1015 drop pump to 75' DTW - 67. (Rate 1.5 l/min). Reach 80% @ 1050 - need 10 gal to finish fast purge. 1110 - purge 10 gal - start low purge.

PUMP #: E

LEVEL: 80'

ODOR: Slight petroleum

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/13/98
Well ID: 30BR	Field Personnel: BA, AM	

Post

Parameter	6	7	8	9	10	11
Time (min.)	1140	1205				
Depth to Water (ft)	73.04	69.85				
Purge Rate (L/min)	.2	.				
Volume Purged (L)	6.4					
pH	6.41	6.70				
Temperature (°C)	16.6	17.9				
Conductivity (μmhos/cm)	.495	.485				
Dissolved Oxygen (mg/L)	0.60	0.56				
Turbidity (NTU)	3	4				
Eh (mv)	-122.8	-116.2				

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

[redacted] Sherri Pollar
Brian Anderson

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
WELL I.D.: 31BR
WELL CONDITION: GOOD
PROJECT NUMBER: 29600.43
WELL LOCK STATUS: LOCKED
WEATHER: OVERCAST, 70°

GAUGE DATE: 10/8/98
SOUNDING METHOD: Slope Indicator
STICK UP/DOWN (ft):
GAUGE TIME: 800
MEASUREMENT REF: TOP of Inner Casing
WELL DIAMETER (in.): 4"

PURGE DATE: 10/8/98
PURGE METHOD: Low Flow
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
PURGE TIME: 807
FIELD PERSONNEL: SAP/BA
WELL MOUTH VOCs (ppm): Start: 0.3 End: 0

A. TOTAL WELL DEPTH (ft): 46
B. OPEN INTERVAL (ft): 10
C. DEPTH TO WATER (ft): 14.54
D. H_2O COLUMN(ft) (A-B-C): 21.46
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): 13.95
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 20.92

Parameter	Beginning	1	2	3	4	5
Time (min)	807	819	824	829	834	839
Depth to Water (ft)	14.54	15.15	15.15	14.76	14.71	14.79
Purge Rate (L/min)	1.5	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)		—	2.0	4.0	6.0	8.0
pH		5.93	6.09	6.13	6.17	6.18
Temperature (°C)	Fast	15.4	15.8	16.3	16.7	16.7
Conductivity (µmhos/cm)	Purge	0.332	0.319	0.310	0.307	0.306
Dissolved Oxygen (mg/L)		0.45	0.42	0.45	0.42	0.42
Turbidity (NTU)		0	0	0	0	0
Eh (mv)		84.4	97.0	101.0	101.4	101.6

TOTAL VOLUME WATER PURGED: 20 GAL + (_____ LITERS * 0.264 GAL/LITER) = _____ GAL
SAMPLERS: SAP/BA
SAMPLING DATE: 10/8/98
SAMPLE TYPE: Grab
SAMPLE BOTTLE IDs: 31BR-100898
SAMPLE PARAMETERS: VOC+10, DISSOLVED METALS, DISSOLVED AMMONIA, TDS, DOC, INORGANIC ANIONS, DISSOLVED ALKALINITY, METHANE, SULFIDE
SAMPLING TIME (START/END): 841 → 913
DECONTAMINATION FLUIDS USED: DI H_2O, Methanol
SAMPLE PRESERVATIVES: HCl, HNO_3, H_2SO_4, ~~Hg~~, ZAAC

COMMENTS AND OBSERVATIONS:

PUMP #: F
LEVEL: 20 ft
ODOR: NONE

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/2/98
Well ID: 31BR	Field Personnel: STA/BA	

Parameter	6	7	8	9	10	11
Time (min.)	913					
Depth to Water (ft)	14.76					
Purge Rate (L/min)	0.3					
Volume Purged (L)						
pH	6.39					
Temperature (°C)	15.9					
Conductivity (μmhos/cm)	0.318					
Dissolved Oxygen (mg/L)	0.36					
Turbidity (NTU)	1					
Eh (mv)	5.13					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

1010 CALIBRATION 0945 Horiba
DO 9.75
Temp 16.9
pH 3.96
cond 4.49
Turb 0

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 33BR
WELL LOCK STATUS: locked
WELL CONDITION: USGS box recorder good
WEATHER: Cloudy 60°F
GAUGE DATE: 101398
GAUGE TIME: 0850
SOUNDING METHOD: water level meter
MEASUREMENT REF: TOP Casing
STICK UP/DOWN (ft): up 2 feet 3 inches
WELL DIAMETER (in.): 6"
PURGE DATE: 101398
PURGE TIME: 0906 (for 42 minutes)
PURGE METHOD: fast purge / low flow
FIELD PERSONNEL: M. Goldberg / B. Allen
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	45	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	15	F. CASING VOLUME (GAL) (D*E):	27.76
C. DEPTH TO WATER (ft):	11.49	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	41.65
D. H_2O COLUMN(ft) (A-B-C):	18.51		≈ 42 gal.

Parameter	Beginning	1	2	3	4	5
Time (min)	0906	0948	1000	1005	1010	1015
Depth to Water (ft)	11.49	11.76	11.76	11.75	11.74	11.71
Purge Rate (L/min) →	4 Liters/min or 1 gal/min	0.4 l/m	0.4	0.4	0.4	0.4
Volume Purged (L)		42 gal total	4.8	6.8	8.8	10.8
pH			7.19	7.24	7.26	7.27
Temperature (°C)			14.4	14.4	14.5	14.5
Conductivity (µmhos/cm)			0.473	0.470	0.469	0.469
Dissolved Oxygen (mg/L)			0.46	0.52	0.52	0.33
Turbidity (NTU)			1	0	0	0
Eh (mv)			-59.3	-69.8	-74.7	-77.8

TOTAL VOLUME WATER PURGED: 42.0 GAL + (28.0 LITERS * 0.264 GAL/LITER) = 49.39 GAL
SAMPLERS: BDA/MG
SAMPLING TIME (START/END): 1035 - 1058
SAMPLING DATE: 101398
DECONTAMINATION FLUIDS USED: Methanol / DI H_2O
SAMPLE TYPE: GRAB 33BR-101398
SAMPLE PRESERVATIVES: $HgCl_2$, HNO_3, NaOH, ZnAc, H_2SO_4, HCl
SAMPLE BOTTLE IDs: VOC + 10 by 8260, Sulfides, Methane, Diss. Metals, Diss. Ammonia, Energy, Anions, DOC, TDS, + Alkalinity
SAMPLE PARAMETERS: ↗
COMMENTS AND OBSERVATIONS: Used Pump C. Lowered Pump to ≈35 feet. NO ODORS, NO PID reading. Had USGS meter on top of well.

PUMP #: C
ODOR: NONE
PUMP LEVEL: 35 feet

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101398
Well ID: 33 BR	Field Personnel: Michael Goldberg / B. Allen post sample	

Parameter	6	7	8	9	10	11
Time (min.)	1020	1025	1030	1035	1058	
Depth to Water (ft)	11.70	11.70	11.69	sample	11.68	
Purge Rate (L/min)	0.4	0.4	0.4	taken	0.4	
Volume Purged (L)	12.8	14.8	16.8		28.0	
pH	7.28	7.30	7.33		7.43	
Temperature (°C)	14.6	14.6	14.7		15.0	
Conductivity (μmhos/cm)	0.468	0.467	0.467		0.467	
Dissolved Oxygen (mg/L)	0.17	0.23	0.21		2.02	
Turbidity (NTU)	0	0	0		1	
Eh (mv)	-80.9	-82.2	-84.5		-61.7	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS Sample taken at 1035.

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Amy Winkler
Melissa Baden

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	34BR	WELL LOCK STATUS:	LOCKED
WELL CONDITION:	GOOD	WEATHER:	COOL, CLOUDY, 60's
GAUGE DATE:	10/7/98	GAUGE TIME:	09:07
SOUNDING METHOD:	WLI	MEASUREMENT REF:	TOP OF INNER CASING
STICK UP/DOWN (ft):	FLUSH	WELL DIAMETER (in.):	6"
PURGE DATE:	10/7/98	PURGE TIME:	09:20 –
PURGE METHOD:	FAST	FIELD PERSONNEL:	MRB/AIW
AMBIENT AIR VOCs (ppm)	Start: 2.4 End: ____	WELL MOUTH VOCs (ppm):	Start: 5.7 End: ____

A. TOTAL WELL DEPTH (ft):	47 ~~30.00~~	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	17	F. CASING VOLUME (GAL) (D*E):	32.2
C. DEPTH TO WATER (ft):	8.51	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	48.3
D. H_2O COLUMN(ft) (A-B-C):	21.49		

generator stopped

Parameter	Beginning	1	2	3	4	5
Time (min)	09:20	09:48	10:10	10:15	10:20	10:25
Depth to Water (ft)	8.51	8.88	8.90	8.95	8.93	8.97
Purge Rate (L/min)	2 gpm	.5	.5	.5	.5	.5
Volume Purged (L)	56 gal	55	57.5	60	62.5	65
pH		5.88	6.29	6.34	6.37	6.32
Temperature (°C)		13.3	13.4	13.3	13.3	13.3
Conductivity (mmhos/cm)		.314	.265	.274	.280	.282
Dissolved Oxygen (mg/L)		1.5	1.83	1.40	1.40	1.42
Turbidity (NTU)		241	74	48	37	35
Eh (mv)		113.8	56.7	63.6	77	81.5

TOTAL VOLUME WATER PURGED: 56 GAL + (____ LITERS * 0.264 GAL/LITER) = 82.5 GAL

SAMPLERS: MRB/AIW
SAMPLING TIME (START/END): 1105 / 1123
SAMPLING DATE: 10/7/98
DECONTAMINATION FLUIDS USED: DI / Methanol
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: H_2SO_4, HCl, HNO_3, $HgCl_2$, ZnAc, NaOH
SAMPLE BOTTLE IDs: 34BR-100798
SAMPLE PARAMETERS: VOC+10, TDS, DOC, Dissolved ammonia, Inorg. anions, diss. metals, methane, sulfide, alkalinity,
COMMENTS AND OBSERVATIONS:

PUMP #: [redacted] D
LEVEL: 28'
ODOR: NONE

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date:
Well ID:	Field Personnel:	

Parameter	6	7	8	9	10	11
Time (min.)	14:35					
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH	7.05					
Temperature (°C)	13.9					
Conductivity (μmhos/cm)	0.207					
Dissolved Oxygen (mg/L)	0.79					
Turbidity (NTU)	3					
Eh (mv)	399 ~~670~~					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 35BR
WELL LOCK STATUS: Locked - Threaded Manhole
WELL CONDITION: Good
WEATHER: Sunny, 60's

GAUGE DATE: 101598
GAUGE TIME: 935
SOUNDING METHOD: water level meter
MEASUREMENT REF: top of inner casing
STICK UP/DOWN (ft): flush / 1 foot down
WELL DIAMETER (in.): 6"

PURGE DATE: 101598
PURGE TIME: 940
PURGE METHOD: fast purge / bailer
FIELD PERSONNEL: A. Winkler / M. Baker
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 48.2
B. OPEN INTERVAL (ft): 15.2
C. DEPTH TO WATER (ft): 14.3
D. H_2O COLUMN(ft) (A-B-C): 18.7
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 28.05
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 42.1
≈43

Parameter	Beginning	1022	2	3	4	5
Time (min)	940	~~955~~	1027	1032	1037	1041
Depth to Water (ft)	14.3	20.6	20.69	20.65	20.62	20.59
Purge Rate (L/min)	3 gallons/min	0.1 L/min	0.1	0.4	0.4	0.4
Volume Purged (L)	≈43 gallons	0.5L	1.0	3.0	5.0	7.0
pH		6.45	6.63	6.70	6.78	6.83
Temperature (°C)		13.1	13.0	13.0	13.1	13.2
Conductivity (μmhos/cm)		.188	.185	.184	.183	.182
Dissolved Oxygen (mg/L)		.48	.19	.34	0	-.01
Turbidity (NTU)		23	22	22	23	21
Eh (mv)		-191.8	-212.6	-224.6	-230.1	-229.7

TOTAL VOLUME WATER PURGED: 43 GAL + (31 LITERS * 0.264 GAL/LITER) = 51.2 GAL
SAMPLERS: A. Winkler / M. Baker
SAMPLING TIME (START/END): 1145 / 1153
SAMPLING DATE: 101598
DECONTAMINATION FLUIDS USED: DI Water / Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl, H_2SO_4, HNO_3, ZnAc, NaOH, H_2Cl_2
SAMPLE BOTTLE IDs: 35BR-101598
SAMPLE PARAMETERS: VOC, TDS, Methane, DOC, Alkalinity, Dissolved Inorganic Anions, Dissolved Ammonia sulfide
COMMENTS AND OBSERVATIONS: Well Cover Must be removed with a Large Well Wrench. At 954 the well was Dry. Purging was Completed. Started by flow at 1022

Pump: B
Odor: None
Level = 25 feet

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101598
Well ID: 35BR-101598	Field Personnel: MRB/AIH	

Parameter	6	7	8	9	10	11
Time (min.)	1045	1049	1054	1059	1104	1109
Depth to Water (ft)	20.59	20.5		20.7	20.6	20.45
Purge Rate (L/min)	0.4	0.4	flow	0.4	0.4	0.4
Volume Purged (L)	9.0	11.0	through	15.0	17.0	19.0
pH	6.88	6.94	cell	6.95	7.11	7.14
Temperature (°C)	13.3	13.4	cleared	14.6	14.7	15.0
Conductivity (µmhos/cm)	.181	.180		.180	.179	.176
Dissolved Oxygen (mg/L)	-0.03	-0.05		0.5	.23	.30
Turbidity (NTU)	21	21		21	20	20
Eh (mv)	-226.5	-222		-146.1	-143.1	-132.1

Parameter	12	13	14	15	16	17
Time (min)	1114	1119	1124	1128	1134	1139
Depth to Water (ft)	20.35	20.28	20.2	20.13	20.04	20.02
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	21.0	23.0	25.0	27.0	29.0	31.0
pH	7.08	7.05	7.02	6.99	6.97	6.96
Temperature (°C)	15.1	15.1	15.1	15.1	15.0	15.0
Conductivity (µmhos/cm)	.176	.178	.179	.179	.178	.180
Dissolved Oxygen (mg/L)	.34	.26	.35	.66	1.08	.96
Turbidity (NTU)	18	16	16	17	17	17
Eh (mv)	-117.0	-103.1	-88.1	-73	-54.0	-46.8

COMMENTS AND OBSERVATIONS 1054 flow through cell cleared
Sample Collected 1145 -2 hours since beginning purge

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/5/88
Well ID: 35BR-10158	Field Personnel: MBM	

Dup Sample

Parameter	18	19	20	21	22	23
Time (min.)	1153					
Depth to Water (ft)	20.0					
Purge Rate (L/min)	0.4					
Volume Purged (L)						
pH 6.89	4.9					
Temperature (°C)	14.6					
Conductivity (μmhos/cm)	.199					
Dissolved Oxygen (mg/L)	1.53					
Turbidity (NTU)	12					
Eh (mv)	-16.3					

Parameter	24	25	26	27	28	29
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

149,000 / 25,500.

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Well in treatment system building.

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	36BR	WELL LOCK STATUS:	N/A
WELL CONDITION:	Good - sample port in treatment building.	WEATHER:	Sunny 60 to 70°
GAUGE DATE:	N/A	GAUGE TIME:	N/A
SOUNDING METHOD:	N/A	MEASUREMENT REF:	N/A
STICK UP/DOWN (ft):	Valve	WELL DIAMETER (in.):	6"
PURGE DATE:	101498	PURGE TIME:	1448
PURGE METHOD:	low flow	FIELD PERSONNEL:	B. Aiken M. Goldberg
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0 0 on Drager tube	WELL MOUTH VOCs (ppm):	Start: 0 End: 0 0 on Drager tube

A. TOTAL WELL DEPTH (ft):	125	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	23	F. CASING VOLUME (GAL) (D*E):	N/A
C. DEPTH TO WATER (ft):	N/A	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	N/A
D. H_2O COLUMN(ft) (A-B-C):	N/A		

Sample taken at 1450

Parameter	Beginning	1448	2	3	4	5
Time (min)	1448	~~1448~~ (EDT)				
Depth to Water (ft)	N/A	—				
Purge Rate (L/min)		—				
Volume Purged (L)	3 gallons total	—				
pH		7.13				
Temperature (°C)		17.8				
Conductivity (µmhos/cm)		0.278				
Dissolved Oxygen (mg/L)		1.43				
Turbidity (NTU)		0				
Eh (mv)		-115.4				

TOTAL VOLUME WATER PURGED: _____ GAL + (_____ LITERS * 0.264 GAL/LITER) = ≈3.0 GAL

SAMPLERS: BDA/MG

SAMPLING TIME (START/END): 1450 to 1503

SAMPLING DATE: 101498

DECONTAMINATION FLUIDS USED: Methanol/DI H_2O

SAMPLE TYPE: GRAB

SAMPLE PRESERVATIVES: $HgCl_2$, HNO_3, HCL, NaOH, ZnAc, H_2SO_4

SAMPLE BOTTLE IDs: 36BR-101498

SAMPLE PARAMETERS: VOC, TDS, DOC, Diss. Ammonia, Alkalinity, Diss. Metals, Inorgs. Anions, Methane, sulfide

COMMENTS AND OBSERVATIONS: No readings on Drager tube + PID. Used fan and stood upwind. Sample taken at 1450. Water quality reading taken at 1448.

PUMP #: N/A
LEVEL: N/A

ODOR: NONE (used fan)

2/3 Sherri Pullar Brian Andersen

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	37BR	WELL LOCK STATUS:	LOCKED
WELL CONDITION:	GOOD	WEATHER:	Sunny 65° Light breeze
GAUGE DATE:	10/6/98	GAUGE TIME:	1254
SOUNDING METHOD:	Interphase Probe	MEASUREMENT REF:	TOC
STICK UP/DOWN (ft):	3.7	WELL DIAMETER (in.):	6"
PURGE DATE:	10/6/98	PURGE TIME:	1304 - 1420
PURGE METHOD:	Low Flow	FIELD PERSONNEL:	BA/SAP
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 9 End: 0

A. TOTAL WELL DEPTH (ft):	75	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	15	F. CASING VOLUME (GAL) (D*E):	73.83
C. DEPTH TO WATER (ft):	10.78	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	110.75
D. H_2O COLUMN(ft) (A-B-C):	49.22		

Parameter	Beginning	1	2	3	4	5
Time (min)	1304	@ 1350 1400	1405	1410	1415	1420
Depth to Water (ft)	10.78	34.50	32.71	30.68	29.05	28.00
Purge Rate (L/min) *	2.5 gpm	.6	.4	.4	.4	.4
Volume Purged (L)		1.2	4.2	6.2	8.2	10.2
pH		6.55	6.40	6.35	6.32	6.31
Temperature (°C)	Fast	14.7	14.9	15.0	15.0	14.9
Conductivity (µmhos/cm)		.226	.228	.228	.228	.229
Dissolved Oxygen (mg/L)	Purge	0.04	0.09	0.08	0.08	0.08
Turbidity (NTU)		9	2	0	0	0
Eh (mv)		-45.2	-34.0	-38.6	-39.8	-40.0

TOTAL VOLUME WATER PURGED: 115 GAL + (10.2 LITERS * 0.264 GAL/LITER) = 117.7 GAL

SAMPLERS:	BA/SAP	SAMPLING TIME (START/END):	(1425) → 1455
SAMPLING DATE:	10/6/98	DECONTAMINATION FLUIDS USED:	DI, Methanol
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	Argon, HCL, HNO_3 H_2SO_4 $HgCl_2$
SAMPLE BOTTLE IDs:	37BR-100698		

SAMPLE PARAMETERS: VOC, Dissolved Metals, Cations, Anions, DOC, Methane, TDS, Alkalinity, Dissolved Ammonia,

COMMENTS AND OBSERVATIONS: Fast Purge started at 20 ft and 2.5 gal/min then to 35 ft and 2.5 gal/min eventually to 50 ft to finish. Flow adjust necessary due to rising water in well during slow, low flow.

PUMP #: 9717070 ODOR: NONE Observed.
LEVEL: 50 ft.

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10 06 98
Well ID: 37BR	Field Personnel: SAP / BA	

post sample

Parameter	6	7	8	9	10	11
Time (min.)	1455	~~1455~~				
Depth to Water (ft)	23.97					
Purge Rate (L/min)						
Volume Purged (L)						
pH	6.87					
Temperature (°C)	14.9					
Conductivity (μmhos/cm)	0.230					
Dissolved Oxygen (mg/L)	≥0.06					
Turbidity (NTU)	0					
Eh (mv)	14.0					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

~~37,820/46,900~~

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 38BR
WELL LOCK STATUS: Locked
WELL CONDITION: Good
WEATHER: Gray, Cloudy, Rainy

GAUGE DATE: 101398
GAUGE TIME: 1115
SOUNDING METHOD: water level meter
MEASUREMENT REF: Top of Well Casing
STICK UP/DOWN (ft): ~~5' 1"~~ 5' 1"
WELL DIAMETER (in.): 8"

PURGE DATE: 101398
PURGE TIME: 1119
PURGE METHOD: fast purge low flow
FIELD PERSONNEL: A. Winkler + M. Bader
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 115'
B. OPEN INTERVAL (ft): 15'
C. DEPTH TO WATER (ft): 12.84
D. H_2O COLUMN(ft) (A-B-C): 87.16
E. CASING VOLUME/FT (GAL): 2.6
F. CASING VOLUME (GAL) (D*E): 226.616
G. 1.5 CASING VOLUMES (GAL) (F*1.5): ≈ 339 Gallons

Parameter	Beginning	1529 ~~1227~~	2	3	4	5
Time (min)	1119	~~1227~~	1534	1538	1542	1546
Depth to Water (ft)	12.84	75.6	72.28	71.50	71.50	71.40
Purge Rate (L/min)	5gal/min	0.5L	0.5L	0.5L	0.5	0.5
Volume Purged (L)		2.5L	5.0L	~~7.5L~~ 7.5L	10.0	12.5
pH		6.74	6.79	6.86	6.88	6.93
Temperature (°C)		15.9	15.9	~~15.5~~ 9169	16.8	16.6
Conductivity (µmhos/cm)		0.476	0.476	0.460	0.465	.476
Dissolved Oxygen (mg/L)		0.87	0.28	0.19	0.18	.08
Turbidity (NTU)		-8	-8	-8	-9	-9
Eh (mv)		-144.6	-151.4	-164.0	-167.2	-161.6

TOTAL VOLUME WATER PURGED: 339 GAL + (20 LITERS * 0.264 GAL/LITER) = 344.28 GAL

SAMPLERS: MRB/AW
SAMPLING TIME (START/END): 1602/1
SAMPLING DATE: 101398
DECONTAMINATION FLUIDS USED: DI Water/Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl, HNO_3, H_2SO_4, $HgCl_2$, $ZnAc$, NaOH
SAMPLE BOTTLE IDs: 38BR-101398
SAMPLE PARAMETERS: VOC, Methane, TDS, Sulfides, Dissolved Metals, Inorganic Anions, DOC, Alkalinity, Dissolved Iron

COMMENTS AND OBSERVATIONS: At 1235 Well Vent O_2 Started purging at 1240 - Depth to water has only recharged to 60 feet. Pumped Well to Dryness at 1445, Completed Purging ≈ 340 Gallons. Turbidity is reading - Numbers but Sample is clear

PUMP #: F
ODOR: Sulfur
LEVEL: 80 feet

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101398
Well ID: 38BR-101398	Field Personnel: A. Winkler/K. Bolin	

Post Sample

Parameter	6	7	8	9	10	11
Time (min.)	1550	1555	1600			
Depth to Water (ft)	70.41	70.25	69.71			
Purge Rate (L/min)	0.5	0.5	0.5			
Volume Purged (L)	15.0	17.5	20.0			
pH	6.97	7.04	7.09			
Temperature (°C)	16.5	16.4	16.3			
Conductivity (μmhos/cm)	.480	.481	.482			
Dissolved Oxygen (mg/L)	0	-0.03	-0.07			
Turbidity (NTU)	-9	-9	-9			
Eh (mv)	-173.2	-179.1	-173.8			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

Melissa Bader
Bethany Allen

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	39BR	WELL LOCK STATUS:	locked
WELL CONDITION:	Good	WEATHER:	65°-70°F drizzling cloudy
GAUGE DATE:	100898	GAUGE TIME:	0845
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	top of steel casing
STICK UP/DOWN (ft):	up	WELL DIAMETER (in.):	4"
PURGE DATE:	100898	PURGE TIME:	0904
PURGE METHOD:	fast purge/ low flow	FIELD PERSONNEL:	B. Allen M. Bader
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	88	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	20	F. CASING VOLUME (GAL) (D*E):	35.07
C. DEPTH TO WATER (ft):	14.05	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	52.61
D. H_2O COLUMN(ft) (A-B-C):	53.95		≈53 gal.

Parameter	Beginning	1	2	3	4	5
Time (min)	0904	0919	0952	0957	1002	1007
Depth to Water (ft)	14.05	19.71	19.75	14.75	14.65	14.66
Purge Rate (L/min)	2 gpm	1 gpm	0.5 gpm	0.5 gpm	0.5	0.5
Volume Purged (L)	30 gal	~~33 gal~~ (BDA)	33 gal	2.5 L	5.0	7.5
pH				7.12	7.21	7.29
Temperature (°C)			63 total	17.4	17.6	17.8
Conductivity (mmhos/cm)			gallons	0.280	0.276	0.274
Dissolved Oxygen (mg/L)			purged	0.28	0.22	0.29
Turbidity (NTU)				0	0	0
Eh (mv)				-163.7	-168.4	-182.2

TOTAL VOLUME WATER PURGED: 53 GAL + (27.5 LITERS * 0.264 GAL/LITER) = ~~72.6~~ 125 GAL ~ 160.2

SAMPLERS: BDA/MB
SAMPLING TIME (START/END): 1044/1102
SAMPLING DATE: 100898
DECONTAMINATION FLUIDS USED: DI Water
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl/HNO3, ICE, NaOH, H_2SO_4
SAMPLE BOTTLE IDs: 39BR-100896
SAMPLE PARAMETERS: VOC, TDS, Methane, DOC, Dissolved Alkalinity, Dissolved Metals, Inorganic Anions (5)

COMMENTS AND OBSERVATIONS: USGS boxes on wells. Decreased flow to 1 gpm at 0919 and purged at that rate until 0952. Decreased purge rate from 2 gpm to 1 gpm b/c water level was decreasing too quick.

PUMP #: C
PUMP LEVEL: 20 feet initially at 0904 then 30 to 35 feet at 0919.
ODOR: NONE.

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100898
Well ID: 39BR	Field Personnel: B. Allen / M. Bader	

Parameter	6	7	8	9	10	11
Time (min.)	1012	1017	1022	1027	1032	1037
Depth to Water (ft)	14.66	14.66	14.65	14.61	14.62	14.58
Purge Rate (L/min)	0.5	0.5	0.5	0.5	0.5	0.5
Volume Purged (L)	10.0	12.5	15.0	17.5	20.0	22.5
pH	7.35	7.41	7.50	7.59	7.61	7.68
Temperature (°C)	17.9	18.2	18.4	18.6	18.6	18.7
Conductivity (μmhos/cm)	0.273	0.272	0.271	0.271	0.271	0.270
Dissolved Oxygen (mg/L)	0.38	0.23	0.32	0.30	0.30	0.29
Turbidity (NTU)	0	0	0	0	0	0
Eh (mv)	+187.2	-183.8	-186.8	-185.1	-186.9	-186.9

Post Sample

Parameter	12	13 ↓	14	15	16	17
Time (min)	1042	1102				
Depth to Water (ft)	14.57	14.25				
Purge Rate (L/min)	0.5	0.5				
Volume Purged (L) (DUP) 25.0 →	~~7.67~~	27.5				
pH (DUP) 7.67 →	~~18.9~~	7.88				
Temperature (°C)	18.9	17.4				
Conductivity (μmhos/cm)	0.270	0.279				
Dissolved Oxygen (mg/L)	0.29	0.27				
Turbidity (NTU)	0	0				
Eh (mv)	+195.7	-169.1				

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 40BR
WELL LOCK STATUS: Not locked
WELL CONDITION: good
WEATHER: Raining, 75°

GAUGE DATE: 10/8/98
GAUGE TIME: 1430
SOUNDING METHOD: Interphase probe
MEASUREMENT REF: TOC
STICK UP/DOWN (ft):
WELL DIAMETER (in.): 4"

PURGE DATE: 10/8/98
PURGE TIME: 1437
PURGE METHOD: LOW FLOW
FIELD PERSONNEL: SAP/BA
AMBIENT AIR VOCs (ppm) Start: ____ End: ____ RAIN
WELL MOUTH VOCs (ppm): Start: ____ End: ____ RAIN

DO 0.44

A. TOTAL WELL DEPTH (ft): 129
B. OPEN INTERVAL (ft): 25
C. DEPTH TO WATER (ft): 12.50
D. H_2O COLUMN(ft) (A-B-C): 91.50
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): 59.48
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 89.22

Read 5 min ph 7.27 Cond 0.295 Turb 114

Parameter	Beginning	1	2	3	4	5
Time (min)	1440	1640	1645	1650	1655	1700
Depth to Water (ft)	12.50					
Purge Rate (L/min)	1 gpm	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)		~~0.40~~	~~0.42.0~~	4.0	6.0	~~8.0~~ 8.0
pH		7.45	7.42	7.49	7.44	7.49
Temperature (°C)	Fast	15.6	15.7	15.5	15.2	15.3
Conductivity (µmhos/cm)		0.261	0.270	0.281	0.283	0.299
Dissolved Oxygen (mg/L)	Purge	1.31	1.11	0.99	0.92	0.51
Turbidity (NTU)		491	225	206	173	115
Eh (mv)		-34.2	-101.2	-137.6	-139.6	-121.6

TOTAL VOLUME WATER PURGED: ____ GAL + (____ LITERS * 0.264 GAL/LITER) = ____ GAL
SAMPLERS: SAP/BA
SAMPLING TIME (START/END): 1701 → 1735
SAMPLING DATE: 10/8/98
DECONTAMINATION FLUIDS USED: DI H_2O, Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs: 40BR-100898
SAMPLE PARAMETERS: VOC+10, Methane, sulfide, alkalinity, TDS, DOC, Dissolved Ammonia, dissolved anions, dissolved metals
COMMENTS AND OBSERVATIONS: water running into well very muddy before I arrive... Started

PUMP #: E
ODOR: Slight
BLEVEL: 76'

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	41BR	WELL LOCK STATUS:	UNLOCKED
WELL CONDITION:	OK	WEATHER:	CLOUDY, 60's
GAUGE DATE:		GAUGE TIME:	N/A
SOUNDING METHOD:	N/A	MEASUREMENT REF:	
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	4"
PURGE DATE:	N/A	PURGE TIME:	N/A
PURGE METHOD:		FIELD PERSONNEL:	AM/KS
AMBIENT AIR VOCs (ppm)	Start: 0.0 End 0.0	WELL MOUTH VOCs (ppm):	Start: 15.8 End: 17.3

A. TOTAL WELL DEPTH (ft):	110	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	N/A
C. DEPTH TO WATER (ft):	N/A	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	
D. H_2O COLUMN(ft) (A-B-C):			

Parameter	Beginning	1	2	3	4	5
Time (min)	0945	1007				
Depth to Water (ft)	N/A	N/A				
Purge Rate (L/min)						
Volume Purged (L)	↓	↓				
pH	6.79	6.81				
Temperature (°C)	16.1	16.4				
Conductivity (μmhos/cm)	0.374	0.382				
Dissolved Oxygen (mg/L)	3.78	3.45				
Turbidity (NTU)	0	0				
Eh (mv)	N/A	N/A				

TOTAL VOLUME WATER PURGED: N/A GAL + (N/A LITERS * 0.264 GAL/LITER) = N/A GAL

SAMPLERS:	AM/KS	SAMPLING TIME (START/END):	0955-1005
SAMPLING DATE:	10/9/98	DECONTAMINATION FLUIDS USED:	DI / METHANOL
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCl/HNO_3/H_2SO_4/$HgCl_2$
SAMPLE BOTTLE IDs:	41BR-100998		

SAMPLE PARAMETERS: VOC's, INORGANIC ANIONS, DISSOLVED METALS, METHANOL, SULFIDE, DOC, DISS. AMMONIA, TDS

COMMENTS AND OBSERVATIONS: EXTRACTION WELL

PUMP #: LEVEL N/A ODOR:

0/0

EA Engineering, Science, and Technology

Melissa Bader
Bethany Allen

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	42BR	WELL LOCK STATUS:	not locked
WELL CONDITION:	good	WEATHER:	drizzling cloudy ≈70°F
GAUGE DATE:	100898	GAUGE TIME:	0835
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	top of steel casing
STICK UP/DOWN (ft):	up	WELL DIAMETER (in.):	4"
PURGE DATE:	100898	PURGE TIME:	0855
PURGE METHOD:	fast purge/low flow	FIELD PERSONNEL:	B. Allen / M. Bader
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	140	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	20	F. CASING VOLUME (GAL) (D*E):	69.62
C. DEPTH TO WATER (ft):	12.9	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	104.43 ≈105 gal
D. H_2O COLUMN(ft) (A-B-C):	107.1		

0918

Parameter	Beginning	1 (BDA)	2	3	4	5
Time (min)	0855	~~0918~~	1017	1022	1027	1032
Depth to Water (ft)	12.9	22.65	25.84	24.14	23.80	23.57
Purge Rate (L/min)	2 gal/min or 8 liters per minute	1 gpm	0.5	0.5	0.5	.5
Volume Purged (L)	~~total 105 gallons~~	59+46=105		2.5	5.0	7.5
pH		59 gal purged		8.06	8.41	8.66
Temperature (°C)				17.4	17.2	16.9
Conductivity (µmhos/cm)	(BDA)			0.345	.342	.344
Dissolved Oxygen (mg/L)	46 gal ~~total~~			-0.02	-.07	-.12
Turbidity (NTU)				0	0	0
Eh (mv)				-258.8	-257.3	-260.2

113.05

TOTAL VOLUME WATER PURGED: 105 GAL + (30.5 LITERS * 0.264 GAL/LITER) = ~~135.5~~ 80.52 GAL ~~185.52~~

SAMPLERS:	BDA/MB	SAMPLING TIME (START/END):	1100/1118
SAMPLING DATE:	100898	DECONTAMINATION FLUIDS USED:	DI water / Methanol
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HNO_3, H_2SO_4, $HgCl_2$, ZnA, HCl, NaOH
SAMPLE BOTTLE IDs:	42BR-100898		

SAMPLE PARAMETERS: VOC, TOS, Methane, DOC, Dissolved Metals, Dissolved Ammonia, Inorganic Anions, SVOC

COMMENTS AND OBSERVATIONS: USGS Boxes on wells. Decrease purge rate from 2gpm to 1gpm b/c water level was decreasing to quickly + did not have enough tubing. 46 gallons purged from 0855 to 0918

PUMP #: D

PUMP LEVEL #: 20 feet for fast purge 35 feet at 0918

ODOR: NONE

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100898
Well ID: BRP3-100898	Field Personnel: BDA/MRB	

Post sampling

Parameter	6	7	8	9	10	11
Time (min.)	1037	1042	1047	1052	1118	
Depth to Water (ft)	21.91	21.41	21.31	21.16	22.76	
Purge Rate (L/min)	.5	.5	.5	.5	.5	
Volume Purged (L)	10	12.5	15	17.5	30.5	
pH	8.70	8.77	8.78	8.79	9.22	
Temperature (°C)	17.4	17.3	17.2	17.2	16.8	
Conductivity (µmhos/cm)	.340	.341	.344	.344	.346	
Dissolved Oxygen (mg/L)	-0.11	-0.10	-0.11	-0.11	0.05	
Turbidity (NTU)	0	0	0	0	0	
Eh (mv)	-259.6	11.21	11.39	11.48	-122	

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (µmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

0/0

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	43BR	WELL LOCK STATUS:	good
WELL CONDITION:	good	WEATHER:	overcast, 50°
GAUGE DATE:	10/12/98	GAUGE TIME:	0920
SOUNDING METHOD:	Interface probe	MEASUREMENT REF:	TOC (Inside Steel pipe)
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	4"
PURGE DATE:	10/12/98	PURGE TIME:	N/A
PURGE METHOD:	No purge	FIELD PERSONNEL:	BA AM
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.0 End: 00

A. TOTAL WELL DEPTH (ft):	410	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	214.83
C. DEPTH TO WATER (ft):	54.50	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	322.25
D. H_2O COLUMN(ft) (A-B-C):	330.50		

Parameter	Beginning	1	2	3	4	5
Time (min)	0945					
Depth to Water (ft)						
Purge Rate (L/min)	—					
Volume Purged (L)						
pH	10.88					
Temperature (°C)	14.7					
Conductivity (μmhos/cm)	1.52					
Dissolved Oxygen (mg/L)	10.98					
Turbidity (NTU)	125					
Eh (mv)	-107.2					

TOTAL VOLUME WATER PURGED: / GAL + (/ LITERS * 0.264 GAL/LITER) = / GAL

SAMPLERS: BA, A

SAMPLING TIME (START/END): 1000

SAMPLING DATE: 10/12/98

DECONTAMINATION FLUIDS USED: DI

SAMPLE TYPE:

SAMPLE PRESERVATIVES: HCl, HNO_3, HgCl, H_2SO_4

SAMPLE BOTTLE IDs: 43BR-101298

SAMPLE PARAMETERS: VOC, TDS, Methane, DOC, Dissolved Metals, Inorganic Anions, Alkalinity, Sulfides.

COMMENTS AND OBSERVATIONS:

SAMPLE COLLECTED W/ BAILER LOWERED TO OPEN INTERVAL

PUMP #: NA ODOR: None observed PUMP LEVEL: NA

0/2

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	44BR	WELL LOCK STATUS:	good
WELL CONDITION:	good	WEATHER:	crescent 50°
GAUGE DATE:	10/12/98	GAUGE TIME:	0925
SOUNDING METHOD:	Interface probe	MEASUREMENT REF:	TOC (Inside Steel pipe)
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	4"
PURGE DATE:	No Purge	PURGE TIME:	NA
PURGE METHOD:	—	FIELD PERSONNEL:	BA
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.0 End: 0.0

A. TOTAL WELL DEPTH (ft):	330	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	
C. DEPTH TO WATER (ft):	58.84	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	
D. H_2O COLUMN(ft) (A-B-C):			

Parameter	Beginning	1	2	3	4	5
Time (min)	1025					
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH	10.12					
Temperature (°C)	16.1					
Conductivity (µmhos/cm)	0.375 mS					
Dissolved Oxygen (mg/L)	11.29					
Turbidity (NTU)	2					
Eh (mv)	-50.2					

TOTAL VOLUME WATER PURGED: NA GAL + (_____ LITERS * 0.264 GAL/LITER) = _____ GAL

SAMPLERS: RH, AM, BA

SAMPLING TIME (START/END): 1135

SAMPLING DATE: 10/12/98

DECONTAMINATION FLUIDS USED: DIH2O, Methanol

SAMPLE TYPE: Grab

SAMPLE PRESERVATIVES: HCL, HgCL, H_2SO_4, HNO3

SAMPLE BOTTLE IDs: 44BR-101298 (FB6 - taken on bailer) for VOCs

SAMPLE PARAMETERS: VOC, DOC, Methane, Dissolved Ammonia, Dissolved metals, TDS, Inorganic Alkalinity Anions, & Sulfide

COMMENTS AND OBSERVATIONS: SAMPLE COLLECTED W/ BAILER FROM OPEN INTERVAL

PUMP #: None ODOR: None Detected PUMP LEVEL: None

4/14 0 / 800

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 45BR
WELL LOCK STATUS: Locked
WELL CONDITION: Good EXTRACTION WELL
WEATHER: Warm Sunny
GAUGE DATE: 101498
GAUGE TIME: 1540
SOUNDING METHOD: waterlevel meter
MEASUREMENT REF: top of well casing
STICK UP/DOWN (ft): 3feet
WELL DIAMETER (in.): 4"
PURGE DATE: 101498
PURGE TIME: NA
PURGE METHOD: low flow
FIELD PERSONNEL: NA
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: —

A. TOTAL WELL DEPTH (ft): 210
B. OPEN INTERVAL (ft): 25
C. DEPTH TO WATER (ft): NA
D. H_2O COLUMN(ft) (A-B-C): NA
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): —
G. 1.5 CASING VOLUMES (GAL) (F*1.5): —

Parameter	Beginning	1	2	3	4	5
Time (min)		1555	1600			
Depth to Water (ft)		—	Sample			
Purge Rate (L/min)		—	Taken			
Volume Purged (L)		—				
pH		7.57				
Temperature (°C)		14.2				
Conductivity (µmhos/cm)		.331				
Dissolved Oxygen (mg/L)		1.18				
Turbidity (NTU)		-8				
Eh (mv)		-46.0				

TOTAL VOLUME WATER PURGED: — GAL + (— LITERS * 0.264 GAL/LITER) = — GAL
SAMPLERS: A. Winkler/M. Bader
SAMPLING TIME (START/END): 1600 / 1643
SAMPLING DATE: 101498
DECONTAMINATION FLUIDS USED: DI Water / Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl, HNO_3, H_2SO_4, H_2Cl_2, NaOH, ZnAc
SAMPLE BOTTLE IDs: 45BR-101498
SAMPLE PARAMETERS: VOC, Methane, TDS, Sulfides, Alkalinity, DOC, Dissolved Ammonia, Dissolved Metals, INORGANIC ANIONS
COMMENTS AND OBSERVATIONS: Well is on at this time. No purge necessary

PUMP #: Extraction ODOR: None
LEVEL: Well

8/26-1/, 029 Andy McBride Brian Anderson

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	46BR	WELL LOCK STATUS:	Good
WELL CONDITION:	good	WEATHER:	overcast
GAUGE DATE:	10/12/98	GAUGE TIME:	1355
SOUNDING METHOD:	Interface Probe	MEASUREMENT REF:	TOC (Fresche Steel pipe)
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	4"
PURGE DATE:	10/12/98	PURGE TIME:	1420 - 1630
PURGE METHOD:	FAST/ Low Flow	FIELD PERSONNEL:	AM, BA
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.0 End: 0.0

A. TOTAL WELL DEPTH (ft):	223	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	25	F. CASING VOLUME (GAL) (D*E):	58.253
C. DEPTH TO WATER (ft):	108.38	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	87.38
D. H_2O COLUMN(ft) (A-B-C):	89.62		

Parameter	Begin	~~Beginning~~	2	3	4	5	6
Time (min)	1420	1605	1610	1615	1620	1625	1630
Depth to Water (ft)	150+	150+	150+	150+	150+	150+	150+
Purge Rate (L/min)	1/4m	.4	.2	.2	.2	.2	.2
Volume Purged (L)		2.0	3.0	4.0	5.0	6.0	7.0
pH	FAST	11.49	11.50	11.45	11.40	11.39	11.39
Temperature (°C)	purge	17.3	16.9	16.9	16.8	16.8	16.8
Conductivity (µmhos/cm)		1.16	1.21	1.21	1.22	1.22	1.22
Dissolved Oxygen (mg/L)		1.02	0.71	0.65	0.60	0.61	0.60
Turbidity (NTU)		0	0	1	0	0	0
Eh (mv)		-108.4	-125.2	-128.8	-133.8	-132.8	-132.6

TOTAL VOLUME WATER PURGED: 40 GAL + (7 LITERS * 0.264 GAL/LITER) = 41.79 GAL

SAMPLERS:	AM, BA	SAMPLING TIME (START/END):	1632
SAMPLING DATE:	10/12/98	DECONTAMINATION FLUIDS USED:	methanol, DI
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCL, HgCl, H_2SO_4, ~~HNO_3~~
SAMPLE BOTTLE IDs:	46BE-101298		

SAMPLE PARAMETERS: VOC, DOC, Methane, Dissolved Metals, Dissolved DOC, Dissolved NH_4, Inorganics, Alkalinity, Sulfide.

COMMENTS AND OBSERVATIONS: 1530 - purge at 150' slow mp purge to see if well recharges (~1 L/min) -- purge at ~ 40 gal by 1605 - set up to check parameters because well level decreasing.

PUMP #: F

ODOR: None observed

LEVEL: 160'

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/12/98
Well ID: 46BR	Field Personnel: AM, BA	

Parameter	6 (post)	7	8	9	10	11
Time (min.)	1650					
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH	11.60					
Temperature (°C)	16.6					
Conductivity (μmhos/cm)	1.21					
Dissolved Oxygen (mg/L)	0.83					
Turbidity (NTU)	16					
Eh (mv)	-51.6					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

[redacted]/1156 Sherri Pullar Brian Anderson

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 47BR
WELL LOCK STATUS: LOCKED
WELL CONDITION: GOOD
WEATHER: OVERCAST, 75°, scattered rain

GAUGE DATE: 10/8/98
GAUGE TIME: 1005
SOUNDING METHOD: Interphase probe/Slope Indicator
MEASUREMENT REF: TOP OF Inner Casing (RIM)
STICK UP/DOWN (ft): —
WELL DIAMETER (in.): 4"

PURGE DATE: 10/8/98
PURGE TIME: 1025
PURGE METHOD: LOW FLOW
FIELD PERSONNEL: SAP/BA
AMBIENT AIR VOCs (ppm) Start: 0 End: —
WELL MOUTH VOCs (ppm): Start: 24.0 End: —

A. TOTAL WELL DEPTH (ft): 18
B. OPEN INTERVAL (ft): 15
C. DEPTH TO WATER (ft): 8.45
D. H_2O COLUMN(ft) (A-B-C): 8.55
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): 5.56
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 8.34

Parameter	Beginning	1	2	3	4	5
Time (min)	1025	1035	1040	1045	1050	1055
Depth to Water (ft)	8.45	13.9	13.9	13.72	13.55	13.42
Purge Rate (L/min)	1 gpm	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)		—	1.5	3.0	4.5	6.0
pH		6.25	6.30	6.31	6.31	6.31
Temperature (°C)		13.4	18.4	18.5	18.6	18.7
Conductivity (mmhos/cm)	Fast	0.530	0.528	0.527	0.526	0.526
Dissolved Oxygen (mg/L)	Purge	0.35	0.85	0.87	0.36	0.90
Turbidity (NTU)		34	42	60	78	83
Eh (mv)		-114.2	-127.6	-133.6	-140.4	-142.8

TOTAL VOLUME WATER PURGED: 10 GAL + (36.6 LITERS * 0.264 GAL/LITER) = 19.67 GAL
SAMPLERS: SAP/BA
SAMPLING TIME (START/END): 1211/1230
SAMPLING DATE: 10/2/98
DECONTAMINATION FLUIDS USED: DI H_2O, methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl, H_2SO_4,
SAMPLE BOTTLE IDs: 47BR-100898
SAMPLE PARAMETERS: VOC + 10, DISSOLVED METALS, DISSOLVED ANIONS, DISSOLVED AMMONIA DOC, TDS, SULFIDE, METHANE, ALKALINITY
COMMENTS AND OBSERVATIONS: Purge water containerized and disposed of at Treatment plant (20 gal).

PUMP #: F
LEVEL: 15FT
ODOR: smells like Hydrocarbons

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/8/98
Well ID: 117BR	Field Personnel: BA/SAP	

Parameter	6	7	8	9	10	11
Time (min.)	1100	1105	1110	* 1115	1120	1125
Depth to Water (ft)	13.30	13.15	13.72	13.72	13.72	14.00
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	~~0.3~~ 7.5	9.0	10.5	12.0	13.5	15.0
pH	6.31	6.30	6.30	6.27	6.34	6.34
Temperature (°C)	18.8	18.9	19.2	20.8	20.7	20.3
Conductivity (µmhos/cm)	0.523	0.524	0.522	0.506	0.506	0.499
Dissolved Oxygen (mg/L)	0.89	0.77	0.81	0.72	0.53	0.66
Turbidity (NTU)	77	72	74	41	35	28
Eh (mv)	-153.0	-156.2	-161.2	-159.2	-167.4	-171.4

Parameter	12	13	14	15	16	17
Time (min)	1130	1135 *	1140	1145	1150	1155
Depth to Water (ft)	14.00	14.30	14.28	14.24	14.32	14.82
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	16.5	18.0	19.5	~~20.3~~ 21.0	22.5	24.0
pH	6.35	6.32	6.33	6.34	6.36	6.34
Temperature (°C)	20.3	20.3	20.3	20.3	20.2	19.8
Conductivity (µmhos/cm)	0.497	0.495	0.495	0.496	0.492	0.497
Dissolved Oxygen (mg/L)	0.43	0.58	0.48	0.37	0.51	0.42
Turbidity (NTU)	28	18	15	13	10	7
Eh (mv)	-174.0	~~-169.9~~ -169.9	-176.8	-181.4	-175.9	-189.0

COMMENTS AND OBSERVATIONS * Cleaned Clear tube.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/2/92
Well ID: 47BR	Field Personnel: SAP/BA	

Parameter	18	19	20	21	22	23
Time (min.)	1200	1205	1210	1211	1230	
Depth to Water (ft)	14.82	14.82	14.70	14.20	14.90	
Purge Rate (L/min)	0.3	0.3	0.3		0.3	
Volume Purged (L)	25.5	27.0	28.5		36.6	
pH	6.33	6.33	6.34		6.38	
Temperature (°C)	19.8	20.0	20.1		20.4	
Conductivity (μmhos/cm)	0.495	0.494	0.494		0.482	
Dissolved Oxygen (mg/L)	0.40	0.42	0.41		0.42	
Turbidity (NTU)	5	4	3		2	
Eh (mv)	-191.0	-190.2	-189.4		-185.4	

Parameter	24	25	26	27	28	29
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	48BR	WELL LOCK STATUS:	UNLOCKED
WELL CONDITION:	OK.	WEATHER:	DRIZZLE, 60's
GAUGE DATE:		GAUGE TIME:	N/A
SOUNDING METHOD:	N/A	MEASUREMENT REF:	N/A
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	4"
PURGE DATE:	N/A	PURGE TIME:	N/A
PURGE METHOD:	EXTRACTION WELL	FIELD PERSONNEL:	AM/KS
AMBIENT AIR VOCs (ppm)	Start: ____ End: ____	WELL MOUTH VOCs (ppm):	Start: ____ End: ____

A. TOTAL WELL DEPTH (ft):	100	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	18	F. CASING VOLUME (GAL) (D*E):	N/A
C. DEPTH TO WATER (ft):	N/A	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	
D. H_2O COLUMN(ft) (A-B-C):			

Parameter	Beginning	1	2	3	4	5
Time (min)	0855	0912				
Depth to Water (ft)	N/A	N/A				
Purge Rate (L/min)	N/A	↓				
Volume Purged (L)	N/A					
pH	6.02	6.04				
Temperature (°C)	15.1	14.9				
Conductivity (μmhos/cm)	0.289	0.293				
Dissolved Oxygen (mg/L)	2.26	2.30				
Turbidity (NTU)	0	0				
Eh (mv)	N/A	N/A				

TOTAL VOLUME WATER PURGED: N/A GAL + (N/A LITERS * 0.264 GAL/LITER) = N/A GAL

SAMPLERS:	AM/KS	SAMPLING TIME (START/END):	0900 - 0910
SAMPLING DATE:	10/9/98	DECONTAMINATION FLUIDS USED:	DI / METHANOL
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCl / HNO_3 / H_2SO_4 / $HgCl_2$
SAMPLE BOTTLE IDs:	48BR-100998		
SAMPLE PARAMETERS:			

COMMENTS AND OBSERVATIONS: EXTRACTION WELL

PUMP #: N/A

LEVEL:

ODOR:

7/15

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 49BR
WELL LOCK STATUS: locked
WELL CONDITION: good
WEATHER: cloudy 65°

GAUGE DATE: 10/12/98
GAUGE TIME: 15:00
SOUNDING METHOD: water level meter
MEASUREMENT REF: top steel casing
STICK UP/DOWN (ft): Flush mount + 2½" below grade
WELL DIAMETER (in.): 4"

PURGE DATE: 10/12/98
PURGE TIME: 15:11
PURGE METHOD: low flow / fast purge
FIELD PERSONNEL: M Goldberg / M. Boyer / B. Allen
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): 60
B. OPEN INTERVAL (ft): 18
C. DEPTH TO WATER (ft): 6.59
D. H_2O COLUMN(ft) (A-B-C): 35.41
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): 25.02
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 37.58
≈ 38 gal.

Parameter	Beginning	1	2	3	4	5
Time (min)	1511	1549	1554	1559	1604	1609
Depth to Water (ft)	6.59	8.42	7.85	7.65	7.29	7.21
Purge Rate (L/min)	4 liters/min	4.0 Lm	0.5	0.5	0.5	0.5
Volume Purged (L)	or 1 gal/min	38 gal		5.0	7.5	10.0
pH				6.57	6.98	7.02
Temperature (°C)				19.0	19.0	19.0
Conductivity (mmhos/cm)				0.258	0.252	0.250
Dissolved Oxygen (mg/L)				0.01	0.12	0.22
Turbidity (NTU)				10	2	2
Eh (mv)				49.7	61.5	33.4

TOTAL VOLUME WATER PURGED: 38 GAL + (42.6 LITERS * 0.264 GAL/LITER) = 150.46≈ GAL
SAMPLERS: BDA/MB/MG
SAMPLING TIME (START/END): 1709 - 1723
SAMPLING DATE: 101298
DECONTAMINATION FLUIDS USED: Methanol / DI H_2O
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: $HgCl_2$, HCL, HNO_3, H_2SO_4, NaOH, Zn Ac
SAMPLE BOTTLE IDs: 49BR-101298
SAMPLE PARAMETERS: VOC, TDS, Alkalinity, Diss Ammonia, DOC, Sulfide, Methane, Diss. Metals, Energy Anions
COMMENTS AND OBSERVATIONS: no readings at 1554 b/c we needed to adjust our equipment. Pump at 42 feet.

PUMP #: D
LEVEL: 42ft.
ODOR: NONE

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101298
Well ID: 49BR-	Field Personnel: B. Allen / M. Bader / M. Goldberg	

Parameter	6	7	8	9	10	11
Time (min.)	1614	1619	1624	1629	1634	1639
Depth to Water (ft)	7.11	6.92	6.89	6.88	6.91	6.91
Purge Rate (L/min)	0.5	0.5	0.5	0.5	0.5	0.5
Volume Purged (L)	12.5	15.0	17.5	20.0	22.5	25.0
pH	7.05	7.12	7.13	7.15	7.17	7.18
Temperature (°C)	19.0	19.1	19.2	19.0	19.1	19.1
Conductivity (mmhos/cm)	0.246	0.243	0.243	0.243	0.242	0.242
Dissolved Oxygen (mg/L)	0.22	0.20	0.22	0.23	0.22	0.22
Turbidity (NTU)	2	1	1	1	1	2
Eh (mv)	14.5	2.0	-2.9	-5.5	-9.8	-17.0

Parameter	12	13	14	15	16	17
Time (min)	1644	1649	1654	1659	1704	1709
Depth to Water (ft)	6.91	6.91	6.91	6.92	6.92	Sample
Purge Rate (L/min)	0.5	0.5	0.5	0.5	0.5	taken
Volume Purged (L)	27.5	30.0	32.5	35.0	37.5	
pH	7.19	7.20	7.20	7.21	7.21	
Temperature (°C)	19.2	19.2	19.2	19.2	19.2	
Conductivity (mmhos/cm)	0.241	0.241	0.241	0.241	0.241	
Dissolved Oxygen (mg/L)	0.24	0.24	0.25	0.25	0.26	
Turbidity (NTU)	2	2	2	2	2	
Eh (mv)	-27.2	-36.8	-41.2	-45.1	-48.6	

COMMENTS AND OBSERVATIONS Sample taken at 1709.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101298
Well ID: 49BR-101218	Field Personnel: M. Bader / B. Allen / M. Goldberg	

post sample

Parameter	18	19	20	21	22	23
Time (min.)	1723					
Depth to Water (ft)	8.00					
Purge Rate (L/min)	0.3					
Volume Purged (L)	42.6					
pH	7.19					
Temperature (°C)	19.0					
Conductivity (μmhos/cm)	.243					
Dissolved Oxygen (mg/L)	0.19					
Turbidity (NTU)	9					
Eh (mv)	-39.9					

Parameter	24	25	26	27	28	29
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

10/11

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	50BR	WELL LOCK STATUS:	locked
WELL CONDITION:	Good	WEATHER:	Cloudy, 60s, Wet
GAUGE DATE:	101498	GAUGE TIME:	844
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	Top of well casing
STICK (UP)/DOWN (ft):	4 feet	WELL DIAMETER (in.):	4"
PURGE DATE:	101498	PURGE TIME:	850
PURGE METHOD:	low flow	FIELD PERSONNEL:	B. Parnell/A. Winkler/M. Bed
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	80	E. CASING VOLUME/FT (GAL):	0.65
B. OPEN INTERVAL (ft):	20	F. CASING VOLUME (GAL) (D*E):	26.36
C. DEPTH TO WATER (ft):	19.45	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	39.54
D. H_2O COLUMN(ft) (A-B-C):	40.55		≈40

Parameter	Beginning	1	2	3	4	5
Time (min)	850	930	935	940	~~945~~	950
Depth to Water (ft)	19.45	~~18~~ 19.58	19.61	19.61	19.62	19.62
Purge Rate (L/min)	1 gallon/min	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	40 gallons	1.0	2.0	3.0	4.0	5.0
pH		6.19	6.23	6.29	6.34	6.39
Temperature (°C)		13.1	13.1	13.2	13.2	13.2
Conductivity (μmhos/cm)		0.320	0.318	0.314	0.311	0.307
Dissolved Oxygen (mg/L)		0.42	0.40	0.43	0.49	0.53
Turbidity (NTU)		-2	-2	-2	-2	-2
Eh (mv)		-6.0	-8.4	-12.6	-14.0	-15.0

TOTAL VOLUME WATER PURGED: 40 GAL + (36 LITERS * 0.264 GAL/LITER) = 49.5 GAL

SAMPLERS:	MB/AW/DP	SAMPLING TIME (START/END):	954/1029
SAMPLING DATE:	101498	DECONTAMINATION FLUIDS USED:	DI Water/Methanol
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	1+Cl, HNO_3, HCl, ZnAc, NaOH, H_2SO_4
SAMPLE BOTTLE IDs:	50BR-101498		

SAMPLE PARAMETERS: VOC, Methane, TDS, Sulfides, DOC, Dissolved Metals, Alkalinity, Dissolved Ammonia

COMMENTS AND OBSERVATIONS: Turbidity reading negative numbers, but sample clear.

PUMP #: C ODOR: None

LEVEL: 50.5

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/14/98
Well ID: 50BR-101498	Field Personnel: Wheeler, Parrella, BAKER	

Post Sample

Parameter	6	7	8	9	10	11
Time (min.)	1021					
Depth to Water (ft)	19.90					
Purge Rate (L/min)	.2					
Volume Purged (L)	36					
pH	7.30					
Temperature (°C)	13.9					
Conductivity (μmhos/cm)	0.300					
Dissolved Oxygen (mg/L)	0.46					
Turbidity (NTU)	-4					
Eh (mv)	-124.8					

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

~~9~~/94 Sherri Pillar Page 1 of 2
Brian ~~Ade~~ Andersen

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 51 BR
WELL LOCK STATUS: LOCKED
WELL CONDITION: GOOD
WEATHER: OVERCAST, 65°

GAUGE DATE: 10/7/93
GAUGE TIME: 1319
SOUNDING METHOD: Slope Indicator
MEASUREMENT REF: Top of inner casing
STICK UP/DOWN (ft):
WELL DIAMETER (in.): 4"

PURGE DATE: 10/7/93
PURGE TIME: 1329
PURGE METHOD: FAST PURGE/LOW FLOW
FIELD PERSONNEL: SAP/BA
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0.3 End: 0

A. TOTAL WELL DEPTH (ft): 96
B. OPEN INTERVAL (ft): 10
C. DEPTH TO WATER (ft): 17.75
D. H_2O COLUMN(ft) (A-B-C): 68.25
E. CASING VOLUME/FT (GAL): 0.65
F. CASING VOLUME (GAL) (D*E): 44.36
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 66.54

Parameter	Beginning	1	2	3	4	5
Time (min)	1329	1357	1402	1407	~~1412~~ 1412	1417
Depth to Water (ft)	17.75	18.25	18.25	18.20	18.20	18.20
Purge Rate (L/min)	2 gpm	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	60 gal	—	1.5	3.0	4.5	6.0
pH		7.12	7.24	7.37	7.44	7.49
Temperature (°C)	Fast	13.9	14.1	14.6	15.0	15.8
Conductivity (µmhos/cm)		0.263	0.261	0.259	0.257	0.253
Dissolved Oxygen (mg/L)	Purge	0.86	0.89	0.99	0.91	0.85
Turbidity (NTU)		5	3	2	2	3
Eh (mv)		~~6.6~~ 18.6	10.6	-11.6	-20.0	-36.2

TOTAL VOLUME WATER PURGED: 60 GAL + (27 LITERS * 0.264 GAL/LITER) = 67.13 GAL
SAMPLERS: SAP/BA
SAMPLING TIME (START/END): 1443 → 1528
SAMPLING DATE: 10/7/93
DECONTAMINATION FLUIDS USED: ~~HCL~~ DI H20, methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCL, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs: 51BR-100798 MS/MSD / DUP1-100798
SAMPLE PARAMETERS: VOC + 10, Dissolved metals, Dissolved ammonia, Dissolved anions, alkalinity, DOC, TDS, Sulfide, Methane
COMMENTS AND OBSERVATIONS: Started pump at 20 ft then lowered to 30 ft

Purged water was containerized and disposed of at Treatment plant.

PUMP #: E
ODOR:
LEVEL: 30 ft

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/7/92
Well ID: 51BR	Field Personnel: SAP/BA	

Parameter	6	7	8	9	10	11
Time (min.)	1422	1427	1432	1437	1442	1443
Depth to Water (ft)	18.20	18.20	18.20	18.20	18.20	
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	
Volume Purged (L)	7.5	9.0	10.5	12.0	13.5	
pH	7.53	7.57	7.60	7.68	7.73	
Temperature (°C)	16.1	15.8	15.8	16.3	16.7	
Conductivity (μmhos/cm)	0.252	0.254	0.254	0.255	0.254	
Dissolved Oxygen (mg/L)	0.83	0.86	0.83	0.80	0.80	
Turbidity (NTU)	3	3	3	3	3	
Eh (mv)	-44.4	-55.6	-64.6	-64.8	-62.4	

Sampled @ 1443
End @ 1528

Parameter	12	13	14	15	16	17
Time (min)	1528					
Depth to Water (ft)	1828					
Purge Rate (L/min)	0.3					
Volume Purged (L)	~~15.5~~ 27					
pH	7.80					
Temperature (°C)	16.7					
Conductivity (μmhos/cm)	0.262					
Dissolved Oxygen (mg/L)	0.86					
Turbidity (NTU)	6					
Eh (mv)	36.6					

COMMENTS AND OBSERVATIONS _____

15 * B.A = Bethany Allen BH - Bob Harris

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 11-MW-1
WELL LOCK STATUS: NOT locked
WELL CONDITION: good
WEATHER: cloudy ≈60°F

GAUGE DATE: 100598
GAUGE TIME: 1130
SOUNDING METHOD: water level meter
MEASUREMENT REF: +0 c
STICK UP/DOWN (ft): up
WELL DIAMETER (in.): 4"

PURGE DATE: 100598
PURGE TIME: 1140
PURGE METHOD: low
FIELD PERSONNEL: *All (BA, BH)
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0.5 ppm End: 0.0 ppm

A. WELL DEPTH (ft): 22
B. DEPTH TO WATER (ft): 16.91 ~~9.6~~ (BH)
C. H_2O COLUMN (ft) (A-B): 5.08
D. WELL VOLUME/FT (GAL): 0.65
E. WELL VOLUME (GAL) (C*D): 3.302
F. THREE WELL VOLUMES (GAL) (E*3): 9.906 gal ≈ 10 gal.

Parameter	Beginning	1	2	3	4	5
Time (min)	1140	1145	1150	1155	1200	1205
Depth to Water (ft)	16.91	16.88	17.01	17.17	17.02	17.03
Purge Rate (L/min)	0.8 L/m	0.4 L/m	0.4 L/m	0.4 L/m	0.4	0.4
Volume Purged (L)		2.0 L	4.0 L	6.0 L	8.0 L	10.0 L
pH		5.25	5.23	5.27	5.28	5.29
Temperature (°C)		16.9	17.9	18.7	18.5	19.0
Conductivity (mmhos/cm)		0.160	0.122	0.120	0.122	0.123
Dissolved Oxygen (mg/L)		2.68	2.36	2.34	2.07	1.98
Turbidity (NTU)		330	495	532	277	277
Eh (mv)		—	91.2	100.8	108.2	114.9

TOTAL VOLUME WATER PURGED: — GAL + (40 LITERS * 0.264 GAL/LITER) = 10.56 GAL
SAMPLERS: mB, RH, BH, BA, BDH, AM, KS, SAP
SAMPLING TIME (START/END): 1330/1410
SAMPLING DATE: 100598
DECONTAMINATION FLUIDS USED: methanol, DI,
SAMPLE TYPE: GrAB
SAMPLE PRESERVATIVES: HCl H_2SO_4 HNO_3
SAMPLE BOTTLE IDs: 11MW1-100598
SAMPLE PARAMETERS: VOC, TDS, Inorg. Anions, Dis. metals, DOC, Alkalinity, Sulfide, Methane (American Rain)
COMMENTS AND OBSERVATIONS: NO ODOR - START AT ≈ 18 feet tubing or 18 ft well depth. went to 2 hrs, to get Turbidity below 10 or and it never did.

PUMP #: D
ODOR: NONE
LEVEL: 18 feet.

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100598
Well ID: 11MW1	Field Personnel: ALL	

Parameter	6	7	8	9	10	11
Time (min.)	1210	1215	1220	1225	1230	1235
Depth to Water (ft)	17.05	17.12	17.08	17.07	17.07	17.07
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	12.0	14.0	16.0	18.0	20.0	22.0
pH	5.29	5.25	5.21	5.21	5.20	5.20
Temperature (°C)	19.4	20.0	20.0	20.04	20.6	20.9
Conductivity (µmhos/cm)	0.124	0.123	0.125	0.120	~~0.128~~ 0.120	0.120
Dissolved Oxygen (mg/L)	2.04	1.97	1.91	1.90	1.96	1.87
Turbidity (NTU)	270	150	173	243	179	139
Eh (mv)	119.6	131.8	131.8	130.6	130.2	131.4

Parameter	12	13	14	15	16	17
Time (min)	1240	1245	1250	1255	1300	1305
Depth to Water (ft)	17.07	17.06	17.07	17.07	17.07	17.07
Purge Rate (L/min)	.4	.4	.4	.4	.4	.4
Volume Purged (L)	24.0	26.0	28.0	30.0	32.0	34.0
pH	5.20	5.19	5.19	5.18	5.18	5.17
Temperature (°C)	21.1	21.3	21.3	21.4	21.5	21.6
Conductivity (µmhos/cm)	.119	.119	.119	.119	.118	.119
Dissolved Oxygen (mg/L)	1.84	1.86	1.67	1.96	1.86	1.94
Turbidity (NTU)	99	80	58	38	34	24
Eh (mv)	133.8	126.6	133.4	136.8	128.0	136.2

COMMENTS AND OBSERVATIONS _____

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/5/98
Well ID: 11MW1	Field Personnel: ALL	

Parameter	18	19	20	21 (Post Sample)	22	23
Time (min.)	1310	1315	1320	1410		
Depth to Water (ft)	17.06	17.07	17.07			
Purge Rate (L/min)	.4	.4	.4			
Volume Purged (L)	36.0	38.0	40.0			
pH	5.16	5.16	5.16	5.07		
Temperature (°C)	21.8	21.7	21.9	21.7		
Conductivity (μmhos/cm)	.118	.118	.118	.123		
Dissolved Oxygen (mg/L)	1.99	1.81	1.94	2.84		
Turbidity (NTU)	18	20	16	16		
Eh (mv)	139	138.8	141.2	125.8		

Parameter	24	25	26	27	28	29
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS _____

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EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 35-MW-1
WELL LOCK STATUS: locked
WELL CONDITION: good (area has recently been resurfaced)
WEATHER: cloudy 65°-70°

GAUGE DATE: 101298
GAUGE TIME: 1150
SOUNDING METHOD: water level meter
MEASUREMENT REF: top of PVC casing
STICK UP/DOWN (ft): up by 2ft 7in.
WELL DIAMETER (in.): 4"

PURGE DATE: 101298
PURGE TIME: 1204
PURGE METHOD: low flow
FIELD PERSONNEL: B. Allen M. Bader
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. WELL DEPTH (ft): 25
B. DEPTH TO WATER (ft): 17.5 ~~10.69~~
C. H_2O COLUMN (ft) (A-B): 7.5
D. WELL VOLUME/FT (GAL): 0.65
E. WELL VOLUME (GAL) (C*D): 4.88
F. THREE WELL VOLUMES (GAL) (E*3): 14.625

Parameter	Beginning	1	2	3	4	5
Time (min)	1204	1214	1219	1224	1229	1234
Depth to Water (ft)	17.50	18.01	18.11	18.12	18.12	18.45
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.5 (BDA)
Volume Purged (L)	~~4.0~~ (BDA)	4.0	6.0	8.0	10.0	12.05 (BDA)
pH		5.43	5.41	5.42	5.41	5.39
Temperature (°C)		16.1	16.2	16.5	17.6	17.9
Conductivity (µmhos/cm)		.338	0.338	0.337	0.336	0.332
Dissolved Oxygen (mg/L)		2.76	2.80	2.30	2.12	2.71
Turbidity (NTU)		48	42	45	45	55
Eh (mv)		201.6	212.1	215.5	217.2	220.7

TOTAL VOLUME WATER PURGED: 1 GAL + (37.5 LITERS * 0.264 GAL/LITER) = 10.9 GAL
SAMPLERS: BDA/MB
SAMPLING TIME (START/END): 1304/1329
SAMPLING DATE: 101298
DECONTAMINATION FLUIDS USED: methanol / DI H_2O
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: $HgCl_2$, HCl, H_2SO_4, HNO_3, NaOH, ZnAc
SAMPLE BOTTLE IDs: 35-MW-1-101298
SAMPLE PARAMETERS: Pesticides, TAL metals, methane, DRO, VOC +10, Alkalinity, Sulfides, Energ. Anions, Diss. Metals, TDS, Dissol. Ammonia
COMMENTS AND OBSERVATIONS: changed out water in flow thru cell at 1234. NO ODORS, used ≈25 feet of tubing and pump at ≈20 foot level.

PUMP #: C
ODOR: NONE
LEVEL: 20 feet

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/2/98
Well ID: 35MW-1	Field Personnel: Bethany Allen Melissa Bader	

Parameter	6	7	8	9	10 (MDA)	11
Time (min.)	1239	1244	1249	1254	1259	1304
Depth to Water (ft)	18.61	18.70	18.76	18.79	18.84	Sample taken
Purge Rate (L/min)	0.5	0.5	0.5	0.5	0.5	
Volume Purged (L)	15.0	17.5	20.0	22.5	25.0	
pH	5.40	5.39	5.39	5.39	5.38	
Temperature (°C)	17.9	18.0	18.1	18.2	18.0	
Conductivity (µmhos/cm)	0.332	0.331	0.331	0.330	0.339	
Dissolved Oxygen (mg/L)	2.71	2.62	2.47	2.31	2.99	
Turbidity (NTU)	53	42	42	49	87	
Eh (mv)	222.6	225.4	227.6	228.6	230.4	

Post Sample

Parameter	12	13	14	15	16	17
Time (min)	1329					
Depth to Water (ft)	20.81					
Purge Rate (L/min)	0.5					
Volume Purged (L)	37.5					
pH	5.41					
Temperature (°C)	16.8					
Conductivity (µmhos/cm)	0.345					
Dissolved Oxygen (mg/L)	1.23					
Turbidity (NTU)	91					
Eh (mv)	243.1					

COMMENTS AND OBSERVATIONS Cleaned flow thru cell at 1257. Turbidity high due to regrading in area around well, RAH OK's us to take sample at 1304

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EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 35-MW-2
WELL LOCK STATUS: unlocked
WELL CONDITION: good
WEATHER: cloudy 55°-60°

GAUGE DATE: 101298
GAUGE TIME: 0934
SOUNDING METHOD: water level meter
MEASUREMENT REF: T.O.C. stick up
STICK UP/DOWN (ft): stick up by 2 feet 3 inches
WELL DIAMETER (in.): 4"

PURGE DATE: 101298
PURGE TIME: 0957
PURGE METHOD: low flow
FIELD PERSONNEL: B. Allen + M. Bader
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. WELL DEPTH (ft): 22
B. DEPTH TO WATER (ft): 12.93
C. H_2O COLUMN (ft) (A-B): 9.07
D. WELL VOLUME/FT (GAL): 0.65
E. WELL VOLUME (GAL) (C*D): 5.90
F. THREE WELL VOLUMES (GAL) (E*3): 17.68

Parameter	Beginning	1	2	3	4	5
Time (min)	0957	1002	1007	1012	1017	1022
Depth to Water (ft)	12.93	13.09	13.35	13.37	13.27	12.84
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)		2.0	4.0	6.0	8.0	10.0
pH		4.38	4.96	4.67	4.58	4.54
Temperature (°C)		15.8	16.2	16.0	15.8	15.8
Conductivity (mmhos/cm)		0.321	.292	.290	.291	.288
Dissolved Oxygen (mg/L)		3.10	3.08	2.29	1.98	1.88
Turbidity (NTU)		18	25	42	30	15
Eh (mv)		170.1	192.1	198.6	203.4	206.3

TOTAL VOLUME WATER PURGED: 5 GAL + (31.4 LITERS * 0.264 GAL/LITER) = 8.77 GAL
SAMPLERS: BDA + MB
SAMPLING TIME (START/END): 1055/1116
SAMPLING DATE: 101298
DECONTAMINATION FLUIDS USED: Methanol | DI Water
SAMPLE TYPE: GRABS
SAMPLE PRESERVATIVES: $HgCl_2$, HNO_3, H_2SO_4, HCl, ZnAc, NaOH
SAMPLE BOTTLE IDs: 35mw2-101298 (For EBS, samples were taken for Pesticides + TAL metals w/ MS/
SAMPLE PARAMETERS: VOC TIC, TDS, DOC, DISS. AMMONIA, DISS. METALS, INORG ANIONS, SULFIDES, METHANE, ALKALINITY)
COMMENTS AND OBSERVATIONS: DUPLICATE DUP-1 FOR PEST/TAL METALS ONLY

PUMP #: B
LEVEL: 17 feet
ODOR: NONE

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101298
Well ID: 35MW-2-101298	Field Personnel: B. Allen & M. Bader	

Parameter	6	7	8	9	10	11
Time (min.)	1027	1032	1037	1042	1047	1052
Depth to Water (ft)	12.84	12.80	12.81	12.80	12.79	12.78
Purge Rate (L/min)	0.4	0.4	0.4	0.4	0.4	0.4
Volume Purged (L)	12.0	14.0	16.0	18.0	20.0	22.0
pH	4.65	4.71	4.72	4.74	4.88	4.96
Temperature (°C)	15.9	15.9	16.0	16.1	16.2	16.2
Conductivity (μmhos/cm)	0.289	0.289	0.289	0.288	0.287	0.287
Dissolved Oxygen (mg/L)	1.94	1.50	1.57	2.04	1.88	1.87
Turbidity (NTU)	13	9	7	6	4	4
Eh (mv)	209.4	211.0	212.4	214.3	217.5	218.8

post sample

Parameter	12	13	14	15	16	17
Time (min)	1116					
Depth to Water (ft)	13.36					
Purge Rate (L/min)	0.4					
Volume Purged (L)	31.4					
pH	5.43					
Temperature (°C)	15.0					
Conductivity (μmhos/cm)	0.284					
Dissolved Oxygen (mg/L)	2.09					
Turbidity (NTU)	36					
Eh (mv)	224.7					

COMMENTS AND OBSERVATIONS _____

4657 / 1,517

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
WELL I.D.: BRP-1
WELL CONDITION: good
PROJECT NUMBER: 29600.43
WELL LOCK STATUS: grove - EW
WEATHER: clearing, sun

GAUGE DATE: 10/13/98
SOUNDING METHOD: slope indicator
STICK UP/DOWN (ft): EW
GAUGE TIME: 1310 EW
MEASUREMENT REF: TOC - well casing
WELL DIAMETER (in.): 6"

PURGE DATE: 10/13/98
PURGE METHOD: Fast / Low Purge
AMBIENT AIR VOCs (ppm) Start: 0.0 End: 0.0
PURGE TIME: Fast 1323 - 1345
FIELD PERSONNEL: Andy McBride / Brian Anderson
WELL MOUTH VOCs (ppm): Start: 0.0 End: 0.0

A. TOTAL WELL DEPTH (ft): 60
B. OPEN INTERVAL (ft): 39.5
C. DEPTH TO WATER (ft): 5.23
D. H_2O COLUMN(ft) (A-B-C): 15.27
E. CASING VOLUME/FT (GAL): 1.5
F. CASING VOLUME (GAL) (D*E): 22.905
G. 1.5 CASING VOLUMES (GAL) (F*1.5): 34.37

Post

Parameter	Beginning	1	2	3	4	5
Time (min)	1323	1350	1355	1400	1405	1430
Depth to Water (ft)		5.31	5.31	5.31	5.31	5.34
Purge Rate (L/min)	FAST Purge.	0.2	0.2	0.2	0.2	
Volume Purged (L)	@ 2 spm	.2	1.2	2.2	3.2	
pH		6.16	6.10	6.05	6.03	6.18
Temperature (°C)		18.2	18.2	18.3	18.4	18.6
Conductivity (µmhos/cm)		.569	.568	.568	.566	.567
Dissolved Oxygen (mg/L)		0.56	0.67	0.70	0.65	0.87
Turbidity (NTU)		3	4	4	4	3
Eh (mv)		-91.6	-111.4	-115.2	-120.1	-117.8

TOTAL VOLUME WATER PURGED: 43 GAL + (3.2 LITERS * 0.264 GAL/LITER) = 44 GAL
SAMPLERS: AM, BA
SAMPLING DATE: 10/13/98
SAMPLE TYPE: GRAB
SAMPLE BOTTLE IDs: BRP-1-101398
SAMPLING TIME (START/END): 1407
DECONTAMINATION FLUIDS USED: H/A
SAMPLE PRESERVATIVES: HCl, $HgCl_2$, H_2SO_4, HNO_3
SAMPLE PARAMETERS: VOC, TDS, DOC, DISS. AMMONIA, DISS. METALS, INORGANIC ANIONS, METHANE, SULFIDE, ALKALINITY
COMMENTS AND OBSERVATIONS:

PUMP #: -(EW)
LEVEL: -
ODOR: Slight petroleum like.

39,076 / 59,000

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	BRP-2	WELL LOCK STATUS:	UNLOCKED
WELL CONDITION:	O.K.	WEATHER:	CLOUDY, 60's
GAUGE DATE:	10/9/98	GAUGE TIME:	1120
SOUNDING METHOD:		MEASUREMENT REF:	T.O.C.
STICK UP/DOWN (ft):	1.5 FT	WELL DIAMETER (in.):	6"
PURGE DATE:	10/9/98	PURGE TIME:	1125
PURGE METHOD:	EXTRACTION WELL	FIELD PERSONNEL:	AM/KS
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.0 End: 3.4

A. TOTAL WELL DEPTH (ft):	47.1	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	20	F. CASING VOLUME (GAL) (D*E):	
C. DEPTH TO WATER (ft):	7.35	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	N/A
D. H_2O COLUMN(ft) (A-B-C):			

Parameter	Beginning	1	2	3	4	5
Time (min)	1125	1130	1135	1140	1145	1150
Depth to Water (ft)	7.35	17.65	17.80	18.01	18.26	
Purge Rate (L/min)	N/A	→				
Volume Purged (L)	N/A	→				
pH	6.51	6.40	6.35	6.33	6.33	6.34
Temperature (°C)	16.6	15.5	15.5	15.5	15.5	15.5
Conductivity (μmhos/cm)	1.01	1.01	1.02	1.01	1.01	1.01
Dissolved Oxygen (mg/L)	1.47	1.24	0.13	0.06	0.01	0.01
Turbidity (NTU)	-10(?)	-10	-10	-10	-10	-10
Eh (mv)	N/A	→				

TOTAL VOLUME WATER PURGED: N/A GAL + (N/A LITERS * 0.264 GAL/LITER) = N/A GAL

SAMPLERS:	AM/KS	SAMPLING TIME (START/END):	1210-1230
SAMPLING DATE:	10/9/98	DECONTAMINATION FLUIDS USED:	DI / METHANOL
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCL, HNO_3/ H_2SO_4/ $HgCl_2$
SAMPLE BOTTLE IDs:	BRP-2 - 100998		

SAMPLE PARAMETERS: VOC, TDS, DOC/DISS. AMMONIA, METHANE, SULFIDE, DISS. METALS, INORGANIC ANIONS

COMMENTS AND OBSERVATIONS: BRP-2 [redacted] EXTRACTION WELL PURGED TO TREATMENT PLANT

PUMP #:

LEVEL:

ODOR:

EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date:
Well ID:	Field Personnel:	

Parameter	6	7	8	9	10	11
Time (min.)	1157	1202	1205	1220		
Depth to Water (ft)	15.75	16.92	[illegible]	18.03		
Purge Rate (L/min)	N/A	N/A	"	"		
Volume Purged (L)	N/A	N/A	"	"		
pH	6.35	6.35	6.35	6.45		
Temperature (°C)	15.3	15.3	15.3	15.2		
Conductivity (μmhos/cm)	0.792	0.793	0.793	0.792		
Dissolved Oxygen (mg/L)	0.25	0.20	0.18	0.10		
Turbidity (NTU)	-10	-10	-10	-10		
Eh (mv)	N/A	N/A	N/A	N/A		

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS Pump TURNED OFF JUST PRIOR TO 1155 READING RESUMED @ 1157

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EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

Bethany Allen
Melissa Bader

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	BRP-3	WELL LOCK STATUS:	locked
WELL CONDITION:	good-	WEATHER:	pouring rain 70°F
GAUGE DATE:	100898	GAUGE TIME:	1345
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	top of steel casing
STICK UP/DOWN (ft):	down	WELL DIAMETER (in.):	6"
PURGE DATE:	100898	PURGE TIME:	1358
PURGE METHOD:	fast purge/low flow	FIELD PERSONNEL:	B. Allen M. Bader
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. TOTAL WELL DEPTH (ft):	45	E. CASING VOLUME/FT (GAL):	1.5
B. OPEN INTERVAL (ft):	20	F. CASING VOLUME (GAL) (D*E):	25.02
C. DEPTH TO WATER (ft):	8.32	G. 1.5 CASING VOLUMES (GAL) (F*1.5):	37.53
D. H_2O COLUMN(ft) (A-B-C):	16.68		≈38gal.

Parameter	Beginning	1	2	3	4	5
Time (min)	1358	1436	1441	1446	1451	1456
Depth to Water (ft)	8.32	8.31	8.31	8.28	8.22	8.24
Purge Rate (L/min)	1gpm	0.3	0.3	0.3	0.3	.3
Volume Purged (L)			1.5	3.0	4.5	6.0
pH			7.36	7.35	~~7.38~~ 7.48	~~7.48~~
Temperature (°C)			17.4	18.0	~~7.48~~	18.4
Conductivity (mmhos/cm)			0.421	0.426	0.481	.482
Dissolved Oxygen (mg/L)			0.51	0.78	1.13	1.00
Turbidity (NTU)			59	280	279	285
Eh (mv)			-114.1	-114.6	-107.7	-103.3

TOTAL VOLUME WATER PURGED: 38 GAL + (18.5 LITERS * 0.264 GAL/LITER) = ~~86.5~~ 42.88 GAL

SAMPLERS:	BRA/MB	SAMPLING TIME (START/END):	1531
SAMPLING DATE:	100898	DECONTAMINATION FLUIDS USED:	DI H_2O Methanol
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	HCL, HNO_3, H_2SO_4, HCl
SAMPLE BOTTLE IDs:	BRP3-100898		

SAMPLE PARAMETERS: VOC, Sulfides, Methane, DOC, Inorg. Anions, Dissolved Metals, Alkalinity, Diss. Ammonia, TDS

COMMENTS AND OBSERVATIONS: Foster Wheeler has regraded around this well + Gravel like material surrounds it above it by 2 feet. There is a lot of construction going on in the area + regrading of the area. After 2 hours of purged water + no decrease in turb. by + due to setting ~~of~~ ichoose to sample.

ODOR- NONE

LEVEL - 15 feet

Pump - C

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100898
Well ID: BRP3 - 100898	Field Personnel: BDA/MRB	

Changed monitor

Parameter	6	7	8	9	10	11
Time (min.)	1501	1506	1511	1516	1521	1526
Depth to Water (ft)	8.26	8.21	8.21	8.21	8.21	8.21
Purge Rate (L/min)	0.3	0.3	0.3	0.3	.3	.3
Volume Purged (L)	7.5	9.0	10.5	12.0	13.5	15
pH	7.49	7.12	7.11	7.05	7.02	7.00
Temperature (°C)	18.5	19.0	19.0	19.0	19.0	19.0
Conductivity (mmhos/cm)	0.481	0.612	0.613	.613	.613	.614
Dissolved Oxygen (mg/L)	1.35	2.01	1.93	1.68	1.81	1.97
Turbidity (NTU)	296	242	247	239	230	242
Eh (mv)	-99.1	Broke Meter		-50	-62.4	-66

Post Sample

Parameter	12	13	14	15	16	17
Time (min)	1531	1539				
Depth to Water (ft)	I took	8.21				
Purge Rate (L/min)	sample	.3				
Volume Purged (L)		18.5				
pH		7.77				
Temperature (°C)		16.4				
Conductivity (μmhos/cm)		.475				
Dissolved Oxygen (mg/L)		.11				
Turbidity (NTU)		48				
Eh (mv)		-86.1				

COMMENTS AND OBSERVATIONS _____

595981

Melissa Dader
Michael Goldberg

EA® EA Engineering, Science, and Technology

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: WEST DITCH WELL
WELL LOCK STATUS: N/A
WELL CONDITION: Good
WEATHER: Sunny, 70s

GAUGE DATE: —
GAUGE TIME: —
SOUNDING METHOD: —
MEASUREMENT REF: —
STICK UP/DOWN (ft): —
WELL DIAMETER (in.): —

PURGE DATE: — EW
PURGE TIME: —
PURGE METHOD: — EW
FIELD PERSONNEL: — MB/MG
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. TOTAL WELL DEPTH (ft): —
B. OPEN INTERVAL (ft): —
C. DEPTH TO WATER (ft): —
D. H_2O COLUMN(ft) (A-B-C): —
E. CASING VOLUME/FT (GAL): —
F. CASING VOLUME (GAL) (D*E): —
G. 1.5 CASING VOLUMES (GAL) (F*1.5): —

Parameter	Beginning	1	2 (Post Sample)	3	4	5
Time (min)		1015	1050			
Depth to Water (ft)		NA	NA			
Purge Rate (L/min)		0.3	0.3			
Volume Purged (L)		NA	~~NA~~			
pH		6.10	6.72			
Temperature (°C)		15.5	15.7			
Conductivity (µmhos/cm)		.634	.566			
Dissolved Oxygen (mg/L)		2.14	2.07			
Turbidity (NTU)		1	9			
Eh (mv)		-42.2	-54.2			

TOTAL VOLUME WATER PURGED: — GAL + (— LITERS * 0.264 GAL/LITER) = — GAL
SAMPLERS: M.Goldberg/M.B.
SAMPLING TIME (START/END): 1030/1050
SAMPLING DATE: ~~10/15/98~~ 10/16/98 (RAH)
DECONTAMINATION FLUIDS USED: DI Water/Methanol
SAMPLE TYPE: Grab
SAMPLE PRESERVATIVES: HCl, HNO_3, H_2SO_4, $HgCl_2$, NaOH, ZnAc
SAMPLE BOTTLE IDs: WD-101698
SAMPLE PARAMETERS: TDS, Methane, Sulfides, VOC+10, Alkalinity, DOC, Dissolved Ammonia, Dissolved Metals
COMMENTS AND OBSERVATIONS: Chuck from ETI hooked up a sample port to get samples. Well was working, no need for purging. ~~No place to~~

PUMP #: Extraction Well
LEVEL:
ODOR: None

[redacted] 4512

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GONE

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 025
WELL LOCK STATUS:
WELL CONDITION:
WEATHER:

GAUGE DATE:
GAUGE TIME:
SOUNDING METHOD:
MEASUREMENT REF:
STICK UP/DOWN (ft):
WELL DIAMETER (in.): 4"

PURGE DATE:
PURGE TIME:
PURGE METHOD:
FIELD PERSONNEL:
AMBIENT AIR VOCs (ppm) Start: ____ End: ____
WELL MOUTH VOCs (ppm): Start: ____ End: ____

A. WELL DEPTH (ft): 8
B. DEPTH TO WATER (ft):
C. H_2O COLUMN (ft) (A-B):
D. WELL VOLUME/FT (GAL): 0.65
E. WELL VOLUME (GAL) (C*D):
F. THREE WELL VOLUMES (GAL) (E*3):

Parameter	Beginning	1	2	3	4	5
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

TOTAL VOLUME WATER PURGED: ____ GAL + (____ LITERS * 0.264 GAL/LITER) = ____ GAL

SAMPLERS:
SAMPLING TIME (START/END):
SAMPLING DATE:
DECONTAMINATION FLUIDS USED:
SAMPLE TYPE:
SAMPLE PRESERVATIVES:
SAMPLE BOTTLE IDs:
SAMPLE PARAMETERS:
COMMENTS AND OBSERVATIONS:

PUMP #:
ODOR:
LEVEL:

[redacted]/438 Brian Anderson, Sheri Pullen, Bob Haras

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	125	WELL LOCK STATUS:	good
WELL CONDITION:	good	WEATHER:	overcast, 60°
GAUGE DATE:	10/7/98	GAUGE TIME:	0900
SOUNDING METHOD:	Interface	MEASUREMENT REF:	TOC - Inner PVC
STICK UP/DOWN (ft):		WELL DIAMETER (in.):	4"
PURGE DATE:	10/07/98	PURGE TIME:	0916
PURGE METHOD:	Low Flow	FIELD PERSONNEL:	BA, SAP
AMBIENT AIR VOCs (ppm)	Start: 0.0 End: 0.0	WELL MOUTH VOCs (ppm):	Start: 0.7 End: 0.0

A. WELL DEPTH (ft):	22.5	D. WELL VOLUME/FT (GAL):	0.65
B. DEPTH TO WATER (ft):	17.5	E. WELL VOLUME (GAL) (C*D):	3.25
C. H_2O COLUMN (ft) (A-B):	5.0	F. THREE WELL VOLUMES (GAL) (E*3):	9.75

Parameter	Beginning	1	2	3	4	5
Time (min)	0925	0930	0940	0945	0950	0955
Depth to Water (ft)	17.51	17.50	17.51	17.51	17.50	17.50
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	1.8	2.8	4.8	5.8	6.8	7.8
pH	5.79	5.76	6.01	5.88	6.00	6.01
Temperature (°C)	14.3	14.3	16.6	17.8	17.8	17.8
Conductivity (mmhos/cm)	.465	.463	.463	.467	.457	.456
Dissolved Oxygen (mg/L)	0.96	1.71	1.84	2.10	1.46	1.37
Turbidity (NTU)	-10 *a	-10 *a	2	2	1	1
Eh (mv)	91.8	62.8	28.4	x24.0	25.0	23.8

TOTAL VOLUME WATER PURGED: ~ GAL + (14.8 LITERS * 0.264 GAL/LITER) = 3.91 GAL

SAMPLERS:	BH, BA	SAMPLING TIME (START/END):	1040 - 1100
SAMPLING DATE:	10/07/98	DECONTAMINATION FLUIDS USED:	DI / Methanol
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	HCl, HgCl, H_2SO_4, HNO_3
SAMPLE BOTTLE IDs:	125-100798		

SAMPLE PARAMETERS: VOCs, TDS, Methane, DOC, NH4, Dissolved Metals, Inorganic Anions, Alk, o Sulf

COMMENTS AND OBSERVATIONS: *a Problem with turbity reading. *b - recalibrate

Pump F

PUMP #: 9717076

LEVEL: 19 feet.

ODOR: slight petroleum

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/7/98
Well ID: 12S	Field Personnel: BA, SAP	

Parameter	6	7	8	9	10	11
Time (min.)	1000	1005	1010	1015	1020	1025
Depth to Water (ft)	17.50	17.51	17.51	17.51	17.45	17.45
Purge Rate (L/min)	0.2	0.2	0.2	0.2	0.2	0.2
Volume Purged (L)	8.8	9.8	10.8	11.8	12.8	13.8
pH	6.02	6.01	6.04	6.05	6.04	6.03
Temperature (°C)	17.6	18.1	18.2	18.1	18.0	17.9
Conductivity (µmhos/cm)	.455	.450	.449	.450	.451	.451
Dissolved Oxygen (mg/L)	1.40	1.45	0.86	0.40	0.95	1.26
Turbidity (NTU)	1	1	1	1	1	1
Eh (mv)	18.0	-3.0	-3.0	-17.4	-19.6	-19.2

Post sample

Parameter	12	13	14	15	16	17
Time (min)	1030	1035	1100			
Depth to Water (ft)	17.45	17.45	17.30			
Purge Rate (L/min)	0.1	0.1	-			
Volume Purged (L)	14.3	14.8				
pH	6.03	6.03	6.03			
Temperature (°C)	17.8	17.8	19.2			
Conductivity (µmhos/cm)	.452	.452	.439			
Dissolved Oxygen (mg/L)	0.96	0.63	2.92			
Turbidity (NTU)	1	1	1			
Eh (mv)	-19.8	-20.0	14.8			

COMMENTS AND OBSERVATIONS _____

Extraction well

EA Engineering, Science, and Technology

Melissa Bader
Bethany Allen

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	315	WELL LOCK STATUS:	bolted shut
WELL CONDITION:	GOOD	WEATHER:	overcast, rainy, 60's
GAUGE DATE: (BM)	10/9/98	GAUGE TIME:	845
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	top of well casing
STICK UP/DOWN (ft):	1.82 feet - height of extraction well casing	WELL DIAMETER (in.):	4"
PURGE DATE: (BM)	10/9/98	PURGE TIME:	846
PURGE METHOD:	low flow	FIELD PERSONNEL:	B. Allen & M. Bader
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: 0 End: 0

A. WELL DEPTH (ft):	20	D. WELL VOLUME/FT (GAL):	0.65
B. DEPTH TO WATER (ft):	2.5	E. WELL VOLUME (GAL) (C*D):	11.375
C. H_2O COLUMN (ft) (A-B):	17.5	F. THREE WELL VOLUMES (GAL) (E*3):	17.055

low flow

Parameter	Beginning	1	2	3	4	5
Time (min)	846	8.56	913	918	923	928
Depth to Water (ft)	—	—	—	—	—	—
Purge Rate (L/min)	1 gpm 4 L/min	.5 L/min	0.5	0.5	.5	.5
Volume Purged (L)			16 L/m	2.5	5.0	7.5
pH			6.53	6.66	6.60	6.61
Temperature (°C)			17.5	17.6	18.4	18.4
Conductivity (µmhos/cm)		~~.307~~	.307	.301	.288	.288
Dissolved Oxygen (mg/L)			4.75	4.39	3.36	3.25
Turbidity (NTU)			not functioning		730	719
Eh (mv)			19.3	19.4	16.9	17.0

TOTAL VOLUME WATER PURGED: 17 GAL + (49.1 LITERS * 0.264 GAL/LITER) = 146.624 GAL

SAMPLERS:	B. Allen + M. Bader	SAMPLING TIME (START/END):	1040 / 1110
SAMPLING DATE:	10 09 98	DECONTAMINATION FLUIDS USED:	DI water / Methanol
SAMPLE TYPE:	Grab	SAMPLE PRESERVATIVES:	~~HCl, HNO_3, H_2SO_4, Zn Ac, NaOH~~ H_2 Cl_2
SAMPLE BOTTLE IDs:	315-100998		

SAMPLE PARAMETERS: VOC, TOS, Methane, DOC, Dissolved Arsenic, Dissolved Metals, Inorganic Anions, Alk + SM

COMMENTS AND OBSERVATIONS: Depth to Water Probe Reading Could not be taken due to size of well & wiring in the way. Choose to use depth reading from last sampling event.

PUMP #: NA

LEVEL: NA

ODOR: None

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100998
Well ID: 315 - 100998	Field Personnel: B. Allen + M. Baile	

Parameter	6	7	8	9	10	11
Time (min.)	933	938	943	948	953	~~956~~ 958
Depth to Water (ft)	—	—	—	—	—	—
Purge Rate (L/min)	0.5	.5	0.5	.5	.5	.5
Volume Purged (L)	10.0	12.5	15.0	17.5	20	22.5
pH	6.67	6.69	6.70	6.60	6.68	6.68
Temperature (°C)	18.4	18.4	18.4	19.2	19.3	19.2
Conductivity (μmhos/cm)	.287	.287	.286	.281	.279	.279
Dissolved Oxygen (mg/L)	3.42	2.49	2.29	3.09	2.29	2.27
Turbidity (NTU)	682	663	603	370	363	339
Eh (mv)	16.0	15.4	15.0	14.9	16.6	17.7

Parameter	12	13	14	15	16	17
Time (min)	1003	1008	1013	1018	1023	1028
Depth to Water (ft)	—	—	—	—	—	—
Purge Rate (L/min)	0.5	.5	.5	.5	.5	nb. 5.3
Volume Purged (L)	25.0	27.5	30	32.5	35.0	~~37.5~~ 36.5
pH	6.69	6.70	6.70	5.76	6.16	6.30
Temperature (°C)	19.2	19.0	19.0	19.4	19.2	19.0
Conductivity (μmhos/cm)	.279	.280	.280	.331	.315	.304
Dissolved Oxygen (mg/L)	2.28	2.20	2.19	2.76	1.74	1.29
Turbidity (NTU)	340	319	326	148	150	147
Eh (mv)	19.2	19.6	19.9	21.5	20.4	18.7

COMMENTS AND OBSERVATIONS 948 - cleaned flow through cell. 1018 Ambient was changed to misfortune in LCO + cell was cleaned

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 100598
Well ID: 31S-100998	Field Personnel: MB/BDA	

Parameter	18	19	20 (Post Sample)	21	22	23
Time (min.)	1033	1038	1110			
Depth to Water (ft)	—	—	—			
Purge Rate (L/min)	.3	.3	.3			
Volume Purged (L)	38.0	39.5	49.1			
pH	6.32	6.33	6.29			
Temperature (°C)	19.0	19.0	18.5			
Conductivity (μmhos/cm)	.303	.302	.305			
Dissolved Oxygen (mg/L)	1.34	1.29	1.57			
Turbidity (NTU)	145	145	121			
Eh (mv)	18.2	18.3	27.2			

Parameter	24	25	26	27	28	29
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS 2 hours since beginning purging. Choose to sample.

9/10 ★ DUPLICATE #2 taken Page 1 of 2
★ MS/MSD Taken

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME:	NAWC TRENTON	PROJECT NUMBER:	29600.43
WELL I.D.:	325	WELL LOCK STATUS:	unlocked
WELL CONDITION:	good	WEATHER:	Cloudy 60°F
GAUGE DATE:	101398	GAUGE TIME:	1106
SOUNDING METHOD:	water level meter	MEASUREMENT REF:	TOP of PVC casing
STICK UP/DOWN (ft):	flush mount	WELL DIAMETER (in.):	4"
PURGE DATE:	101398	PURGE TIME:	1124
PURGE METHOD:	low flow	FIELD PERSONNEL:	~~Bethany Allen~~ Michael Goldberg
AMBIENT AIR VOCs (ppm)	Start: 0 End: 0	WELL MOUTH VOCs (ppm):	Start: ~~0~~ End: ~~0~~

A. WELL DEPTH (ft):	14.8	D. WELL VOLUME/FT (GAL):	0.65
B. DEPTH TO WATER (ft):	8.59	E. WELL VOLUME (GAL) (C*D):	4.04
C. H_2O COLUMN (ft) (A-B):	6.21	F. THREE WELL VOLUMES (GAL) (E*3):	12.12 ≈ 13 gal

Parameter	Beginning		1	2	3	4	5
Time (min)	1124		1134	1139	1144	1149	1154
Depth to Water (ft)	8.59		8.75	8.72	8.69	8.68	8.69
Purge Rate (L/min)	0.4		0.4	0.4	0.4	0.4	0.4
Volume Purged (L)			4.0	6.0	8.0	10.0	12.0
pH			6.18	6.18	6.18	6.18	6.18
Temperature (°C)			18.4	18.5	18.5	18.5	18.6
Conductivity (µmhos/cm)			0.439	0.440	0.443	0.443	0.443
Dissolved Oxygen (mg/L)			1.89	1.86	1.56	1.48	1.56
Turbidity (NTU)			7	7	6	6	6
Eh (mv)			122.9	126.1	126.9	126.0	124.9

TOTAL VOLUME WATER PURGED: — GAL + (32.8 LITERS * 0.264 GAL/LITER) = 8.66 GAL

SAMPLERS:	BDA/MG	SAMPLING TIME (START/END):	1200-1246
SAMPLING DATE:	101398	DECONTAMINATION FLUIDS USED:	y
SAMPLE TYPE:	GRAB	SAMPLE PRESERVATIVES:	Methanol/DI H_2O
SAMPLE BOTTLE IDs:	325-101398/325-101398MS/MSD/DUP-2-101398		$HgCl_2$, HCl, ZnAc, H_2SO_4, NaOH, HNO_3
SAMPLE PARAMETERS:	DQO VOC+10 by 8260, TDS, Methane, Sulfide, Alkalinity, Diss. Metals, Diss. Ammonia, Inorg Anic		

COMMENTS AND OBSERVATIONS: Used Pump B and placed it approximately 10 feet down. NO ODORS. NO PID readings.

PUMP # B
LEVEL: 9 feet or 10 feet

ODOR: NONE

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 101398
Well ID: 325-	Field Personnel: B. Allen / M. Goldberg	

post sample

Parameter	6	7	8	9	10	11
Time (min.)	1159	1200	1246			
Depth to Water (ft)	8.69	sample taken	9.33			
Purge Rate (L/min)	0.4		0.4			
Volume Purged (L)	14.0		32.8			
pH	6.19		6.30			
Temperature (°C)	18.5		17.8			
Conductivity (μmhos/cm)	0.443		0.429			
Dissolved Oxygen (mg/L)	1.52		1.19			
Turbidity (NTU)	6		2			
Eh (mv)	122.3		145.8			

Parameter	12	13	14	15	16	17
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

COMMENTS AND OBSERVATIONS MS/MSD and Dup-2 taken
Sample IDs were 325-101398MS/MSD / 325-101398 / Dup-2-101398

1/3 Melissa Baden Bethany Allen

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FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 375
WELL LOCK STATUS: Locked
WELL CONDITION: Good
WEATHER: Sunny 65°-70°F

GAUGE DATE: 100598
GAUGE TIME: 1530
SOUNDING METHOD: water level meter
MEASUREMENT REF: TOC
STICK UP/DOWN (ft): ~~2'~~ flush mount + casing below grade
WELL DIAMETER (in.): 4"

PURGE DATE: 100598
PURGE TIME: 1553
PURGE METHOD: low flow
FIELD PERSONNEL: MB/BDA
AMBIENT AIR VOCs (ppm) Start: 0 End: 0
WELL MOUTH VOCs (ppm): Start: 0 End: 0

A. WELL DEPTH (ft): 16
B. DEPTH TO WATER (ft): 9.42 ~~10.42~~ (BDA)
C. H_2O COLUMN (ft) (A-B): ~~5.58~~ (BDA) 6.58 ~~4.58~~ ~~5.58~~
D. WELL VOLUME/FT (GAL): 0.65 4.277
E. WELL VOLUME (GAL) (C*D): (BDA) ~~3.627~~ ~~2.977~~ (BDA)
F. THREE WELL VOLUMES (GAL) (E*3): ~~10.88~~ ~~8.93~~ (BDA) ~~2.4 gal~~ ≈ 9 gal.

Parameter	Beginning	1	2	3	4	5
Time (min)	1553	1558	1603	1608	1613	1618
Depth to Water (ft)	9.19	9.28	10.01	10.05	10.08	10.31
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)		1.5	3.0	4.5	6.0	7.5
pH		4.88	4.88	4.85	4.74	4.69
Temperature (°C)		19.2	19.3	19.4	19.6	20.0
Conductivity (mmhos/cm)		1.66	1.67	1.68	1.68	1.69
Dissolved Oxygen (mg/L)		1.10	1.28	1.19	1.65	1.15
Turbidity (NTU)		-10	-10	-10	-10	-10
Eh (mv)		93.6	95.0	95.0	94.2	94.2

TOTAL VOLUME WATER PURGED: ~~1~~ GAL + (24 LITERS * 0.264 GAL/LITER) = 6.34 GAL
SAMPLERS: BDA/MB
SAMPLING TIME (START/END): 1715/1740
SAMPLING DATE: 10 05 98
DECONTAMINATION FLUIDS USED: methanol, DI
SAMPLE TYPE: GRAB
SAMPLE PRESERVATIVES: HCl, HNO_3, H_2SO_4
SAMPLE BOTTLE IDs: 375-100598
SAMPLE PARAMETERS: VOC, TDS, Methane, Diss. Ammonia, Diss. Metals, Inorg. Anions, Sulfides, Alkalinity
COMMENTS AND OBSERVATIONS: Increase flow slightly at 1613, Water Quality Reading. Purge water is clear. Changed ~~flow~~ (BDA) before (BDA) 1638 water quality reading.

PUMP #: F
LEVEL: 15ft.
ODOR: NO ODOR

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING (OVERFLOW PAGE)

Site Name: NAWC TRENTON	Project No.: 29600.43	Date: 10/05/98
Well ID: 37S	Field Personnel: BDA/MB	

*changed Horiba

Parameter	6	7	8	9	10	11
Time (min.)	1623	1628	1633	1638	1643	1648
Depth to Water (ft)	10.41	10.46	10.75	10.82	10.82	10.91
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	9.0	10.5	12.0	13.5	15.0	16.5
pH	4.65	4.66	4.74	4.84	4.87	4.90
Temperature (°C)	20.3	20.5	21.4	21.3	21.3	21.3
Conductivity (μmhos/cm)	1.68	1.61	1.27	1.26	1.24	1.24
Dissolved Oxygen (mg/L)	1.29	1.32	1.51	1.70	1.61	1.46
Turbidity (NTU)	-10	-10	* 1	0	0	0
Eh (mv)	92.8	91.9	85.5	94.6	112.7	127.2

Post Sample

Parameter	12	13	14	15	16	17
Time (min)	1653	1658	1703	1708	1713	1740
Depth to Water (ft)	11.20	11.31	11.46	11.48	11.51	14.11
Purge Rate (L/min)	0.3	0.3	0.3	0.3	0.3	0.3
Volume Purged (L)	18.0	19.5	21.0	22.5	24.0	32.1
pH	4.95	4.95	4.95	4.93	4.95	5.02
Temperature (°C)	21.6	21.7	21.9	21.8	21.8	19.5
Conductivity (μmhos/cm)	1.23	1.22	1.22	1.23	1.23	1.51
Dissolved Oxygen (mg/L)	1.62	1.60	1.36	1.33	1.33	2.24
Turbidity (NTU)	0	0	0	0	0	3
Eh (mv)	140.7	146.2	152.1	154.7	155.9	234.8

27 .3 8.1

COMMENTS AND OBSERVATIONS

EA Engineering, Science, and Technology

DRY

FIELD RECORD OF WELL GAUGING, PURGING, AND SAMPLING

SITE NAME: NAWC TRENTON
PROJECT NUMBER: 29600.43
WELL I.D.: 41 S
WELL LOCK STATUS: ___
WELL CONDITION: ___
WEATHER: ___

GAUGE DATE: ___
GAUGE TIME: ___
SOUNDING METHOD: ___
MEASUREMENT REF: ___
STICK UP/DOWN (ft): ___
WELL DIAMETER (in.): 8"

PURGE DATE: ___
PURGE TIME: ___
PURGE METHOD: ___
FIELD PERSONNEL: ___
AMBIENT AIR VOCs (ppm) Start: ___ End: ___
WELL MOUTH VOCs (ppm): Start: ___ End: ___

A. WELL DEPTH (ft): 13
D. WELL VOLUME/FT (GAL): 2.6
B. DEPTH TO WATER (ft): ___
E. WELL VOLUME (GAL) (C*D): ___
C. H_2O COLUMN (ft) (A-B): ___
F. THREE WELL VOLUMES (GAL) (E*3): ___

Parameter	Beginning	1	2	3	4	5
Time (min)						
Depth to Water (ft)						
Purge Rate (L/min)						
Volume Purged (L)						
pH						
Temperature (°C)						
Conductivity (μmhos/cm)						
Dissolved Oxygen (mg/L)						
Turbidity (NTU)						
Eh (mv)						

TOTAL VOLUME WATER PURGED: ___ GAL + (___ LITERS * 0.264 GAL/LITER) = ___ GAL

SAMPLERS: ___
SAMPLING TIME (START/END): ___
SAMPLING DATE: ___
DECONTAMINATION FLUIDS USED: ___
SAMPLE TYPE: ___
SAMPLE PRESERVATIVES: ___
SAMPLE BOTTLE IDs: ___
SAMPLE PARAMETERS: ___
COMMENTS AND OBSERVATIONS: ___

PUMP #:
LEVEL:
ODOR:

APPENDIX B

LABORATORY REPORT NARRATIVES

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 9, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of three water samples and one field blank collected for the NAWC Trenton Navy project on 5 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981648. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981648

November 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981648**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **9 November 1998**

This report contains the results of the analysis of three water samples and one field blank collected on 5 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples field blank, and one trip blank arrived intact by Federal Express at EA Laboratories on 6 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
FB-1	9812309
TRIP BLANK	9812310
37S-10/5/98	9812311
03BR-100598	9812312
11MW1-100598	9812313

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The

narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812309 - EA9812313)

Sample Chronology: Five aqueous samples and associated quality control were analyzed on 17-18 October 1998 for the client specified list of analytes plus library searches (TICs) following the procedures specified in the CLP Statement of Work OLC02.1. All holding times were met.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exception:

- Ketones were spiked into the initial calibration standards at concentrations of 2,4,10,20, and 50 ug/L rather than the method specified 5,10,25,50, and 125 ug/L. Data usability is not affected.

Sample Performance: All quality control criteria were met for the reported samples.

- A matrix spike/matrix spike duplicate analysis was performed on sample 11MW1-100598. Recoveries are evaluated versus the requirements for the laboratory control sample (LCS); recoveries of trichloroethene are masked by the native concentration of this analyte in the sample.

ANIONS - WATER (EA9812309, EA9812311-EA9812313)

Sample Chronology: The samples and associated quality control were analyzed on 6 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate and sulfate. All holding times were met.

Samples 37S-10/5/98 (25X), 03BR-100598 (2X) and 11MW1-100598 (2X) were reanalyzed at a dilution to bring the concentrations of target anions within calibration range. The results of both the undiluted and diluted analyses are included in this report.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exception:

The LCS recovery for sulfate (91%) was within the method acceptance limits of 90-110% but just outside of the project acceptance limits of 93-104%. This recovery is not indicative of a significant

measurement bias. Data usability should not be impacted.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812309,EA9812311-EA9812313)

Sample Chronology: Four samples were prepared on 5 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 5-6 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the follwoing exception:

Iron was detected in the preparation blank at a concentration (186 ug/L) greater than the reporting limit (100 ug/L). All samples which were not non-detects or had concentrations less than 10X the blank were redigested and reanalyzed with an aceeptable blank.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812309, EA9812311-EA9812312, EA9812313)

Sample Chronology: Four samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Dissolved Ammonia	350.1	27 October 1998	28 October 1998
DOC	415.1	N/A	28 October 1998
TDS	160.1	N/A	9 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981648**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **9 November 1998**

---

above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh November 9, 1998
Michael J. Walsh, Laboratory Project Manager

L13400/98084

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA-NJ	Project Manager or Contact: STEVE FELDMAN Phone: 908-665-2440
Project No. 29600 43	Project Name: NAVY, TRENTON
Dept.: 2131 Task: 7216	ATO Number: 7085
Sample Storage/Location: F9/VOA	Report #: 981645
Page 1 of 1	

Report Deliverables: 1 2 (3) 4 (D) E Backup
EDD: (Yes)/No NJDEP Summary EXCEL
DUE TO CLIENT: Nov. 6, 1998
Hard copy due Nov 6, 1998
EDD due Nov. 20, 1998

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC+10 By CLP OLC 02.0	TDS BY 160.1	DOC BY 415.1	DISSOLVED ARGENTINE BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0	EA Labs Accession Number	Remarks
10/5/98	1630	X		FB-1	7	X	X	X	X	X	X	9812309	LPM: ~~DAVID ALEXMAN~~
10/5/98	—	X		TRIP BLANK	3	X						9812310	Michael Walsh
10/5/98	1715	X		375-10/5/98	7	X	X	X	X	X	X	9812311	VOC+10 BY CLP
10/5/98	1718	X		03BA-V10059B	7	X	X	X	X	X	X	9812312	W/ TICs
~~10/5/98~~	~~1330~~	~~X~~		~~MW1-05~~ (RAN 10/6/98)									* VOC +10 by CLP are by low
10/5/98	1330	X		MW1-10059B	7	X	X	X	X	X	X	9812313	concentration OLC 02.0
													· All parameters have been Field Filtered except for VOC & TDS
				Dissolved Inorganic anions are: Sulfate, chloride, & nitrate									· Report dissolved organic carbon to MDL (0.2 mg/L)
				Dissolved Metals are: Ca, Mg, K, Na, Fe, Ba									4 "C" btls
													4 HCl 1 L btls
													4 HNO3 btls
												L14791	4 H2SO4 btls
												COC#0083936	15 VOA Vials

Samples by: (Signature) Ronald C. Harwood	Date/Time 10/5/98 1718	Relinquished by: (Signature) Ronald C. Harwood	Date/Time 10/5/98 1900	Received by: (Signature)	Date/Time	
Relinquished by: (Signature) 10/5/98	Date/Time	Received by Laboratory: (Signature)	Date/Time 10/6/98 1000	Airbill Number: 852811785	Sample Shipped by: (Circle) Fed Ex. Puro. UPS	
Cooler Temp. 3° C pH: (Yes) No Comments:				Custody Seals Intact (Yes) No	Hand Carried Other: 852811785	

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE — EA Laboratories YELLOW — EA Laboratories PINK — Project Manager [redacted] Use

020001

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 23, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of six water samples collected for the NAWC Trenton Navy project on 6 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981653. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981653

November 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981653**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **23 November 1998**

This report contains the results of the analysis of six water samples collected on 6 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 7 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
TRIP BLANK	9812354
FB2-100698	9812355
21BR-100698	9812356
19BR-100698	9812357
28BR-100698	9812358
37BR-100698	9812359
11BR-100698	9812360

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune,

calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812354 - EA9812360)

Sample Chronology: Seven samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 20 October 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met.

Sample 11BR-100698 required a 2X dilution in order to bring the concentrations of target analytes within the instrument calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch method blank, VB810203, had the surrogate recovery of bromofluorobenzene (147%) above the upper QC limit of 120%. This high recovery may be indicative of a positive bias. However, since no target analytes were detected in the blank, there should be no impact on data usability.

Sample Performance: All quality control criteria were met for the reported samples.

ANIONS - WATER (EA9812355-EA9812360)

Sample Chronology: The samples and associated quality control were analyzed on 7 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate and sulfate. All holding times were met.

Samples 21DR-100698 (5X), 28BR-100698 (5X), 37BR-100698 (2X) and 11BR-100698 (2X) were reanalyzed at a dilution to bring the concentrations of target anions within calibration range. The results of both the undiluted and diluted analyses are included in this report.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981653**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **23 November 1998**

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812355-EA9812360)

Sample Chronology: Six samples were prepared on 5 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 5-6 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the follwoing exception:

- Iron was detected in the preparation blank at a concentration (186 ug/L) greater than the reporting limit (100 ug/L). All samples which were not non-detects or had concentrations less than 10X the blank were redigested and reanalyzed with an aceeptable blank.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812355-EA9812360)

Sample Chronology: Six samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Dissolved Ammonia	350.1	27 October 1998	28 October 1998
DOC	415.1	N/A	28 October 1998
TDS	160.1	N/A	13 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met.

CERTIFICATION OF RESULTS

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981653**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **23 November 1998**

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh November 23, 1998
Michael J. Walsh, Laboratory Project Manager

010004

L14791/981646

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA-NJ

Project Manager or Contact: STEVE FELDMANN
Phone: 908-665-2440

Project No. 29600.43
Dept.: 2131 **Task:** 7216

Project Name: NAVY, TRENTON

Sample Storage Location: VOA / IT / Metals → 21

ATO Number: 7085

Page 1 **of** 1 **Report #:** 981653

Report Deliverables: w/ 4D BACK-UP
1 2 (3) 4 (D) E — NJDEP MODIFICATIONS

EDD: (Yes)/No ~~D-BASE~~ / EXCEL summary tables

DUE TO CLIENT: 30-DAY HARDCOPY
Hard Copy due Nov 7, 1998
EDDs due Nov. 21, 1998

Parameters/Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification (19 Characters)	No. of Containers	VOC +10 CLP OLC 02.0	TDS by 160.1	DOC by 415.1	Dissolved Ammonia by 350.1	Dissolved Metals by 200.7	Inorganic Anions by 300.0	EA Labs Accession Number	Remarks
10/6/98	—	X		TRIPBLANK	3	X						9812354	LPM: DAVID DRENNAN/new
10/6/98	1550	X		FB2-100698	7	X	X	X	X	X	X	9812355	
10/6/98	1322	X		21DR-100698	7	X	X	X	X	X	X	9812356	VOC +10 by CLP OLC 02.0
10/6/98	1020	X		19DR-100698	7	X	X	X	X	X	X	9812357	LOW CONCENTRATION
10/6/98	1056	X		28DR-100698	7	X	X	X	X	X	X	9812358	
10/6/98	1425	X		37DR-100698	7	X	X	X	X	X	X	9812359	ALL PARAMETERS EXCEPT
10/6/98	1614	X		11DR-100698	7	X	X	X	X	X	X	9812360	VOC + TDS HAVE
												—	BEEN FIELD FILTERED

Dissolved inorganic anions are: Sulfate, chloride, & nitrate
Dissolved metals: Ca, Mg, K, Na, Fe, Ba

Remarks (cont.):
ANY QUESTIONS, CALL STEVE FELDMANN
Report dissolved organic carbon to MDL (0.2 mg/L)

COC003941
6A 1L, 6A 500mL
6C, 6B
21 VOA
L14819

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A Howard	10/6/98 1614	Ronald A Howard	10/6/98 1730		

Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
		[signature]	10/7/98 1020	1852811763 1852811774	(Fed Ex.) Puro. UPS Hand Carried Other:

Cooler Temp. 2° C pH: ☑ Yes ☐ No Comments: Custody Seals Intact ☒ Yes ☐ No

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

[redacted] 'HI[redacted]EA L[redacted]torie[redacted] [redacted] [redacted]YELL[redacted]-EA[redacted]rator[redacted] [redacted] [redacted] PIN[redacted]roled[redacted]nager[redacted] [redacted] [redacted]aded[redacted]s for[redacted]Ise [redacted]

100020

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 17, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of nine water samples collected for the NAWC Trenton Navy project on 7 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981664. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981664

November 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981664**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **17 November 1998**

This report contains the results of the analysis of nine water samples collected on 7 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 12 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
TRIP BLANK	9812410
FB3-100798	9812411
MW34BR-100798	9812412
12BR-100798	9812413
02BR-100798	9812414
12S-100798	9812415
9BR-100798	9812416
51BR-100798	9812417
DUP1-100798	9812418
MW6BR-100798	9812419

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981664**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **17 November 1998**

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812410, EA9812411, EA9812413 - EA9812419)

Sample Chronology: Nine samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 21 and 22 October and 8 and 9 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses. All reanalyses and dilutions were performed outside the method holding time.

Samples 02BR-100798 and DUP1-100798 required a 10X dilution in order to bring the concentrations of target analytes within the instrument calibration range. Sample 12S-100798 required a 20X dilution. Sample 51BR-100798 required a 5X dilution.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS, VL811081, had the recoveries of carbon tetrachloride (155%), 1,2-dichloropropane (153%) and cis-1,3-dichloropropane (147%) above the upper QC limit of 140%. These high recoveries may be indicative of a positive method bias, however, since none of these analytes were detected in the samples there should be no impact on data usability.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- the batch MS/MSD performed on sample 51BR-100798, had the surrogate recoveries of BFB (78% and 65%) below the lower QC limit of 80%. These low recoveries may be indicative of a

negative bias for these QC samples. Sample MW6BR-100798 had the surrogate recovery of BFB (64%) below the lower QC limit of 80%. This sample was reanalyzed with similar results. These low recoveries may be indicative of a negative bias for these sample analyses.

- the batch MSD, performed on sample 15BR-100798, had the recovery of trichloroethene (612%) above the upper QC limit of 140% (the MS recovery was 114%). This high recovery appears to have been influenced by the high native concentration of trichloroethene in the sample.

ANIONS - WATER (EA9812411 - EA9812419)

Sample Chronology: Nine aqueous samples and associated quality control were analyzed on 08 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Sample MW34BR-100798 was reanalyzed at a five times (5X) dilution, and samples 9BR-100798, 51BR-100798, DUP1-100798, and MW6BR-100798 were reanalyzed at two times (2X) dilutions in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

- The laboratory control sample (LCS) ZL810081 met the laboratory's QC limits of 90-110% recovery for all target anions. The recoveries of nitrate ion (93%) and sulfate ion (90%), however, failed to meet the project criteria of 95-109% and 93-104% recovery, respectively. Data usability should not be impacted.

Sample Performance: All quality control criteria were met for the reported samples with the following exception:

- The matrix spike duplicate (MSD) performed on sample 51BR-100798 had the recovery of sulfate ion just above the upper QC limit of 125% at 126%. The high recovery is based on estimated values (concentrations above the calibration range); data usability is not affected.

METALS - WATER (EA9812411-EA9812419)

Sample Chronology: Nine samples were prepared on 5 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 5-6

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981664**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **17 November 1998**

November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the follwoing exception:

- Iron was detected in the preparation blank at a concentration (186 ug/L) greater than the reporting limit (100 ug/L). All samples which were not non-detects or had concentrations less than 10X the blank were redigested and reanalyzed with an aceeptable blank.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812411-EA9812419)

Sample Chronology: Nine samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Dissolved Ammonia	350.1	27 October 1998	28 October 1998
DOC	415.1	N/A	29 October 1998
TDS	160.1	N/A	13 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met with the following exception:

- The ammonia MS/MSD were not recovered. This may bias the sample results low.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981664**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **17 November 1998**

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used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh November 17, 1998
Michael J. Walsh, Laboratory Project Manager

Chain of Custody Record

Company Name: EA-NJ	Project Manager or Contact: STEVE FELDMANN
Project No. 24600.43	Phone: 908-665-2440
Dept.: 2131 Task: 7216	Project Name: NAVY TRENTON
Sample Storage Location: B2/C11 21-Metals	ATO Number: 7085
Page 1 of 1	Report #: 9810164

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Report Deliverables: w/ 4D BACK-UP
1 2 (3) 4 (D) E
EDD (Yes)/No DBASE/EXCEL NJDEP MODIFICATIONS
DUE TO CLIENT: 30-DAY HARDCOPY

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC +10 by CLP	VOC +10 by 8260	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0					EA Labs Accession Number	Remarks
10/7/98	—	X		TRIPBLANK	6	X	X										9812410	LPM: DAVID BRENNAN
10/7/98	1330	X		FB3-100798	10	X	X	X	X	X	X	X					9812411	
~~10/7/98~~	~~1405~~	~~X~~		~~34BR-100798~~	~~7~~		~~X~~	~~X~~	~~X~~	~~X~~	—	(RAL)					—	VOC +10 BY CLP
10/7/98	1105	X		MW34BR-100798	7		X	X	X	X	X	X					9812412	LOW CONCENTRATION
10/7/98	1425	X		12BR-100798	7	X		X	X	X	X	X					9812413	
10/7/98	1106	X		02BR-100798	7	X		X	X	X	X	X					9812414	ALL PARAMETERS EXCEPT
10/7/98	1040	X		125-100798	7	X		X	X	X	X	X					9812415	VOC. & TDS HAVE
10/7/98	1440	X		90R-100798	7	X		X	X	X	X	X					9812416	BEEN FIELD FILTERED
10/7/98	1443	X		51BR-100798	17	X		X	X	X	X	X	(*)				9812417	
10/7/98	—	X		DUP1-100798	7	X		X	X	X	X	X					9812418	ANY QUESTIONS,
10/7/98	1630	X		MW60R-100798	7	X		X	X	X	X	X					9812419	CALL STEVE FELDMANN
																	—	
																		*RUN MS/MSD ON
																		SAMPLE 51BR-100798
																		4809
																		003952

Samples by: (Signature) Ronald A Harwood	Date/Time 10/7/98 1630	Relinquished by: (Signature) Ronald A Harwood	Date/Time 10/7/98 1630	Received by: (Signature)	Date/Time	
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature) Santa Cova	Date/Time 10/12/98 0930	Airbill Number:	Sample Shipped by: (Circle) Fed Ex Puro. UPS Hand Carried 185281182 2 Other: 185281181 1	

Cooler Temp. 4 C pH: (X) Yes ( ) No Comments: Custody Seals Intact (X) Yes ( ) No

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager *Shaded Areas for Lab Use Only*

10000

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 17, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of nine water samples collected for the NAWC Trenton Navy project on 8 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981667. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981667

November 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981667**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **17 November 1998**

This report contains the results of the analysis of nine water samples collected on 8 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 9 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
31BR-100898	9812523
TRIP BLANK	9812524
FB4-100898	9812525
27BR-100898	9812526
39BR-100898	9812527
42BR-100898	9812528
47BR-100898	9812529
07BR-100898	9812530
BRP-3-100898	9812531
40BR-100898	9812532

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981667**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **17 November 1998**

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

ANIONS - WATER (EA9812523, EA9812525 - EA9812532)

Sample Chronology: Nine aqueous samples and associated quality control were analyzed on 09 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Samples 47BR-100898 and 40BR-100898 were reanalyzed at a two times (2X) dilutions, and samples 07BR-100898 and BRP3-100898 were reanalyzed at five times (5X) dilutions in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812523,EA9812525-EA9812532)

Sample Chronology: Nine samples were prepared on 6 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 8-9 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples with the following exception:

The recovery of calcium in the matrix spike (71%) is below the lower control limit (75%), indicating

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981667**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **17 November 1998**

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the potential for bias to the reported data.

GENERAL CHEMISTRY - WATER (EA9812523, EA9812525-EA9812532)

Sample Chronology: Nine samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Dissolved Ammonia	350.1	28 October 1998	28 October 1998
DOC	415.1	N/A	29 October 1998
TDS	160.1	N/A	13 October 1998

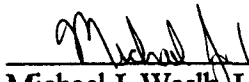
Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met with the following exception:

- The ammonia MS/MSD were not recovered. This may bias the sample results low.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.



November 17, 1998
Michael J. Walsh, Laboratory Project Manager

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA-NJ	Project Manager or Contact: STEVE FELDMANN Phone: 908-665-2440
Project No. 29600.43	Project Name: NAVY TRENTON
Dept.: 2131 Task: 7216	ATO Number: 7085
Sample Storage Location: D10/VOA	
Page 1 of 1	Report #: 9816107

Parameters/Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC +10 by CLP	TDS 04/160.1	DOC By 415.1	Dissolved Ammonia By 350.1	Dissolved Metals By 200.7	Inorganic Anions By 300.0
10/8/98	0841	X		31BR-100898	7	X	X	X	X	X	X
10/8/98	—	X		TRIPBLANK	3	X					
10/8/98	1440	X		FB4-100898	7	X	X	X	X	X	X
10/8/98	1100	X		27BR-100898	7	X	X	X	X	X	X
10/8/98	1044	X		39BR-100898	7	X	X	X	X	X	X
10/8/98	1100	X		42BR-100898	7	X	X	X	X	X	X
10/8/98	1211	X		47BR-100898	7	X	X	X	X	X	X
* 10/8/98	1405	X		07BR-100898	7	X	X	X	X	X	X
10/8/98	1531	X		BRP3-100898	7	X	X	X	X	X	X
10/8/98	1701	X		40BR-100898	7	X	X	X	X	X	X
				Dissolved Inorganics: Sulfate, Chloride, Nitrate							
				Dissolved Metals: Ca, Mg, K, Na, Fe, Ba							

EA Labs Accession Number	Remarks
	Hard Copy due Nov. 9, 1998 EDDs due Nov. 23, 1998
9812523	LPM: DAVID BRENNAN/ MW
9812524	
9812525	VOC +10 CLP - LOW
9812526	CONCENTRATION
9812527	
9812528	ALL PARAMETERS
9812529	EXCEPT VOC + TDS
9812530	HAVE BEEN FIELD
9812531	FILTERED
9812532	
	ANY QUESTIONS, CALL
	STEVE FELDMANN
	* 07BR → Historically
	High TCE concentrations
	Report dissolved organic carbon to MDL (0.2 mg/L)
	LKF807
	COC0003956

Report Deliverables: w/ 4D Back-up
1 2 (3) 4 (D) E
EDD: (Yes)/No NJDEP MODIFICATIONS D-BASE, EXCEL Summary Tables
DUE TO CLIENT: 10 DAY HARD COPY

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A. Harwood	10/8/98 1701	Ronald A. Harwood	10/8/98 1800		
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	
		Joseph Blue	10/9/98 10:15	801688201185	

Sample Shipped by: (Circle) Fed Ex. Puro. UPS
Hand Carried
Other: 801688201185

Cooler Temp. 2 C pH: Yes No Comments: 2, B2 Custody Seals Intact Yes No

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager *Shaded Areas for Lab Use Only*

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

December 1, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is an addendum for our report on the analysis of nine water samples collected for the NAWC Trenton Navy project on 8 October 1998. The EDDs will follow.

Please contact me if you have any questions or require further information and refer to report 981667add. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Mary E Walsh

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981667add

December 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981667add**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **1 December 1998**

This report contains the results of the analysis of nine water samples collected on 8 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 9 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
31BR-100898	9812523
TRIP BLANK	9812524
FB4-100898	9812525
27BR-100898	9812526
39BR-100898	9812527
42BR-100898	9812528
47BR-100898	9812529
07BR-100898	9812530
BRP-3-100898	9812531
40BR-100898	9812532

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981667add**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **1 December 1998**

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812523 - EA9812532)

Sample Chronology: Ten samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 22 October and 12 and 13 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses. All reanalyses and dilutions were performed outside the method holding times.

Sample 31BR-100898 required a 5X dilution in order to bring the concentrations of target analytes within the instrument calibration range. Sample 47BR-100898 was analyzed at both a 5X dilution and a 20X dilution. Sample 07BR-100898 was analyzed at both a 2000X and a 5000X dilution. Sample 40BR-100898 was analyzed at a 20X dilution.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS/LCSD, VL810221/ VD810221, had the recoveries of vinyl chloride (55%/59%) below the lower QC limit of 40%. The batch LCS, VL811129, had the recovery of vinyl chloride (49%) below the lower QC limit. These low recoveries may be indicative of a negative method bias for this target analyte.

- the batch MSD, analyzed on 12 November 1998, was performed 32 minutesoutside of instrument tune time. There should be no impact on data usability.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- sample 31BR-100898 had the surrogate recovery of bromofluorobenzene (78%) below the lower QC limit of 80%. This sample was reanalyzed with similar results. These low recoveries may be

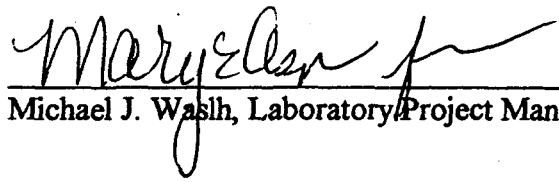
indicative of a negative bias for this sample. The diluted analyses for 47BR-10098 and 07BR-100898 (as well as the MS/MSD performed on this sample) had the surrogate recoveries of bromofluorobenzene below the lower QC limit.

- the batch MS/MSD, performed on sample 07BR-100898DL, had the recoveries of vinyl chloride (57%/57%) below the lower QC limit of 60% and the recoveries of carbon tetrachloride (156%/157%), 1,2-dichloropropane (149%/143%), trichloroethene (159%/155%) and benzene (151%/151%) above the upper QC limit of 140%.

- the batch analyzed on 12 - 13 November 1998 was inadvertently double spiked with internal standard solution. All sample result have been adjusted to reflect the appropriate amount of internal standard added to the samples.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.



December 1, 1998

Michael J. Walsh, Laboratory Project Manager

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

December 4, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of nine water samples collected for the NAWC Trenton Navy project on 9 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981674. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981674

December 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981674**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **4 December 1998**

This report contains the results of the analysis of nine water samples collected on 9 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 10 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
48BR-100998	9812562
BRP2-100998	9812563
15BR-100998	9812564
41BR-100998	9812565
TRIPBLANK	9812566
29BR-100998	9812567
22BR-100998	9812568
08BR-100998	9812569
31S-100998	9812570
04BR-100998	9812571

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981674**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **4 December 1998**

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812562 - EA9812571)

Sample Chronology: Ten samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 22 - 23 October and 22 - 24 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses. All reanalyses and dilutions were performed outside the method holding time.

Sample 48BR-100998 was analyzed at both a 5X and a 50X dilution in order to bring the concentrations of target analytes within the instrument calibration range. Samples BRP2-100998 and 15BR-100998 were analyzed at both a 100X dilution and 1000X dilution. Sample 41BR-100998 was analyzed at a 20X dilution. Samples 29BR-100998 and 04BR-100998 were analyzed at a 100X dilution. Sample 22BR-100998 was analyzed at a 5X dilution. Sample 08BR-100998 was analyzed at a 25X dilution. Sample 31S-100998 was analyzed at a 10X dilution.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS, VL810225, had the recovery of vinyl chloride (55%) below the lower QC limit of 60%.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- the surrogate recoveries of bromofluorobenzene (BFB) in all sample analyses on 23 October 1998, were below the lower QC limit of 80%, ranging from 58% to 74%. All samples were reanalyzed with all surrogate recoveries within the method specified QC limits with the exception of 41BR-100998RE which had the recovery of BFB (123%) above the upper QC limit of 120%.

- a batch MS was not analyzed on 23 October 1998.

- the batch MSD, performed on sample 04BR-100998RE, had the recoveries of vinyl chloride (49%), carbon tetrachloride (55%) and tetrachloroethene (55%) below the lower QC limit of 60%. All MS recoveries were within QC limits. The batch MSD, performed on sample 48BR-100998DL, had the recovery of trichloroethene (56%) below the lower QC limit of 60%. All MS recoveries were within QC limits.

- the reanalysis of sample 41BR-100998 had one or more internal standard areas below the lower QC limit of -50% of the daily calibration standard.

ANIONS - WATER (EA9812562 - EA9812565, EA9812567 - EA9812571)

Sample Chronology: Nine aqueous samples and associated quality control were analyzed on 10 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Sample BRP2-100998 was reanalyzed at a ten times (10X) dilution; samples 15BR-100998, 22BR-100998, and 04BR-100998 were reanalyzed at five times (5X) dilutions; and samples 41BR-100998, 08BR-100998, and 31S-100998 were reanalyzed at two times (2X) dilutions in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812562-EA9812565,EA9812567-EA9812571)

Sample Chronology: Nine samples were prepared on 6 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 8-9 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples with the following exception:

The recovery of calcium in the matrix spike (71%) is below the lower control limit (75%), indicating the

potential for bias to the reported data.

GENERAL CHEMISTRY - WATER (EA9812562-EA9812565, EA9812567-EA9812571)

Sample Chronology: Nine samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Dissolved Ammonia	350.1	28 October 1998	28 October 1998
DOC	415.1	N/A	29 October 1998
TDS	160.1	N/A	13 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met with the following exception:

- The ammonia MS/MSD were not recovered. This may bias the sample results low. The MS/MSD were performed on a Trenton sample from another report.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh December 4, 1998
Michael J. Walsh, Laboratory Project Manager

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA-NJ
Project Manager or Contact: STEVE FELDMANN
Phone: 908-665-2443
Project No. 29600.43
Project Name: NAVY, TRENTON
Dept.: 2131 Task: 7212
Sample Storage Location: VOA/Z1/E3
ATO Number: 7085
Page 1 of 1
Report #: 981674

Report Deliverables: w/ 4D Back-up
1 2 (3) 4 (D) E
EDD: (Yes)/No NJDEP MODIFICATIONS
~~DBASE~~ / EXCEL SUMMARY
DUE TO CLIENT: 30 DAY HARDCOPY

Parameters/Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC +10 by CLP SOW 2.0	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0	EA Labs Accession Number	Remarks
10/7/98	0905	X		48BR-100798	7	X	X	X	X	X	X	9812562	LPM: DAVE BRENNAN / MW
10/8/98	1200	X		BRP2-100898	7	X	X	X	X	X	X	9812563	
10/9/98	1050	X		15BR-100998	7	X	X	X	X	X	X	9812564	VOC+10 CLP - LOW
10/9/98	0955	X		41BR-100998	7	X	X	X	X	X	X	9812565	CONCENTRATION QC 02
10/9/98	—	X		TRIPBLANK	3	X						9812566	
10/9/98	1055	X		29BR-100998	7	X	X	X	X	X	X	9812567	ALL PARAMETERS
10/9/98	1235	X		22BR-100998	7	X	X	X	X	X	X	9812568	EXCEPT VOC + TDS
10/9/98	0956	X		08DR-100998	7	X	X	X	X	X	X	9812569	HAVE BEEN FIELD
10/9/98	1040	X		31S-100998	7	X	X	X	X	X	X	9812570	FILTERED
10/9/98	1415	X		04BR-100998	7	X	X	X	X	X	X	9812571	L14820
													ANY QUESTIONS, CALL STEVE FELDMANN
				Dissolved Inorganics: Sulfate, chloride, nitrate									
				Dissolved Metals: Ca, Mg, K, Na, Fe, Ba									
													* HISTORICALLY HIGH VOC (TCE) CONCENTRATIONS
												30 VOA	MRP-2, 15DR, 04BR
												9 G	COC 999 3963
												18 A 500ML	Report dissolved organic
												9 A 1L	Carbon to MDL (0.2mg/L)

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A Howard	10/9/98 1415	Ronald A Howard	10/9/98 1600		
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
			10/9/98 16:20	185381038574	Fed Ex. Puro. UPS Hand Carried Other:

Cooler Temp. 2° C pH: (X) Yes ( ) No Comments: Custody Seals Intact (X) Yes ( ) No

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager Shaded Areas for Lab Use Only

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 16, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of eight water samples collected for the NAWC Trenton project on 12 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981679. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981679

November 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981679**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **16 November 1998**

This report contains the results of the analysis of eight water samples collected on 12 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 13 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
TRIP BLANK	9812587
FB5-101298	9812588
35MW1-101298	9812589
35MW2-101298	9812590
43BR-101298	9812591
44BR-101298	9812592
FBG-101298	9812593
46BR-101298	9812594
49BR-101298	9812595

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981679**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **16 November 1998**

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812587 - EA9812595)

Sample Chronology: Nine samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 26 October and 8 and 9 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses. All reanalyses and dilutions were performed outside the method holding time.

The batch MS/MSD analyzed on 8 and 9 November 1998, was performed on another Navy Trenton sample (9BR-100798). All data associated with these QC analyses have been included in this report.

Sample 46BR-101298 required a 500X dilution in order to bring the concentrations of target analytes within the instrument calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS, VL810263, had the recovery of vinyl chloride (24%) below the lower QC limit of 40%. This low recovery may be indicative of a negative method bias for this target analyte. This LCS also had the recovery of 1,2-dichloropropane (141%) above the upper QC limit of 140%. This high recovery may be indicative of a positive method bias, however, since this analyte was not detected in the samples there should be no impact on data usability.

- the batch LCS, VL811081, had the recoveries of carbon tetrachloride (155%), 1,2-dichloropropane (153%) and cis-1,3-dichloropropane (147%) above the upper QC limit of 140%. These high recoveries may be indicative of a positive method bias, however, since none of these analytes were detected in the samples there should be no impact on data usability.

- the target analyte, methylene chloride was detected in the method blank, VBLK01, at a

concentration (0.2ppb) below the reporting limit of 1ppb.

- the batch MSD, performed on sample 49BR-101298, was performed 12 minutes outside of instrument tune time.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- samples 43BR-101298, 44BR-101298, 46BR-101298 and 49BR-101298 (as well as the MS/MSD performed on this sample) had the surrogate recoveries of BFB below the lower QC limit of 80%. These samples were reanalyzed with similar results. These low recoveries may be indicative of a negative bias for these samples.

- the batch MS/MSD, performed on sample 49BR-101298, had the recoveries of vinyl chloride (43%/41%) below the lower QC limit of 60% and the recoveries of carbon tetrachloride (149%/144%) and benzene (144%/141%) above the upper QC limit of 140%. The batch MS/MSD, performed on sample 9BR-100798, had the recoveries of carbon tetrachloride (162%/165%), 1,2-dichloropropane (152%/161%) and benzene (169%/169%) above the upper QC limit of 140%.

ANIONS - WATER (EA9812588 - EA9812592, EA9812594, EA9812595)

Sample Chronology: Seven aqueous samples and associated quality control were analyzed on 13 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Samples 43BR-101298, 44BR-101298, and 49BR-101298 were initially analyzed at two times (2X) dilutions in order to bring the pH of the samples within analytical range. All reporting limits are increased by two times for these samples.

- Samples 35MW1-101298, 35MW2-101298, and 43BR-101298 were reanalyzed at five times (5X) dilutions in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981679**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **16 November 1998**

METALS - WATER (EA9812588-EA9812592,EA9812594-EA9812595)

Sample Chronology: Seven samples were prepared on 9 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 11-12 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812588-EA9812592, EA9812594-EA9812595)

Sample Chronology: Seven samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Dissolved Ammonia	350.1	6 November 1998	10 November 1998
DOC	415.1	N/A	30 October 1998
TDS	160.1	N/A	16 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh November 16, 1998
Michael J. Walsh, Laboratory Project Manager

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA NJ
Project Manager or Contact: STEVE FELDMANN
Phone: 908-665-2440
Project No. 2960043
Project Name: NAVY, TRENTON
Dept.: 2131 Task: 7216
Sample Storage Location: K5/K6/VOA Metals 22
ATO Number: 7085
Page 1 of 1
Report #: 981679

Report Deliverables: w/ 4D BACK-UP
1 2 (3) 4 (D) E
EDD: (Yes)/No NJDEP MODIFICATIONS DBASE/ EXCEL SUMMARY TABLE
DUE TO CLIENT: 30-DAY Hard Copy

Parameters/Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC +10 CLP OLC 2.0	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0	EA Labs Accession Number	Remarks (Hard Copy due 11-13-98; EDDs due 11-27-98)
10/12/98	—	X		TRIPBLANK	3	X						9812587	LPM: DAVID BRENNAN
10/12/98	1415	X		FB5-101298	7	X	X	X	X	X	X	9812588	
10/12/98	1304	X		35MW1-101298	7	X	X	X	X	X	X	9812589	VOC +10 CLP - LOW
10/12/98	1055	X		35MW2-101298	7	X	X	X	X	X	X	9812590	CONCENTRATION
10/12/98	1000	X		43BR-101298	7	X	X	X	X	X	X	9812591	
10/12/98	1135	X		44BR-101298	7	X	X	X	X	X	X	9812592	ALL PARAMETERS
10/12/98	1045	X		FB6-101298	3	X						9812593	EXCEPT VOC & TDS
*10/12/98	1632	X		46BR-101298	7	X	X	X	X	X	X	9812594	HAVE BEEN FIELD
10/12/98	1709	X		49BR-101298	7	X	X	X	X	X	X	9812595	FILTERED

Dissolved inorganics = Sulfate, chloride, nitrate
Dissolved Metals = Ca, Mg, K, Na, Fe, Ba

27 VOA 7C, 7 NA, 7 500ml A 7B

ANY QUESTIONS, CALL STEVE FELDMANN
L14822
*46BR - HISTORICALLY HIGH VOC (TCE) CONCENTRATIONS
Report DOC to MDL (0.2mg/L)

OOC0003968

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A. Harwood	10/12/98 1704	Ronald A. Harwood	10/12/98 1800		

Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
		Jerol Blue	10/13/98 1100	1852810234	(Fed Ex.) Puro. UPS; Hand Carried; Other: 801688820092 / 985-280234

Cooler Temp. 2°C pH: ☑ Yes ☐ No Comments: C2, B2, Custody Seals Intact ☑ Yes ☐ No

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

000300

White – EA Laboratories Yellow – ... Pink – Project Manager ...

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

December 4, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of seven water samples collected for the NAWC Trenton Navy project on 13 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981689. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981689

December 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981689**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **4 December 1998**

This report contains the results of the analysis of seven water samples collected on 13 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 14 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
TRIP BLANK	9812677
FB7-101398	9812678
33BR-101398	9812679
32S-101398	9812680
30BR-101398	9812681
38BR-101398	9812682
BRP1-101398	9812683
DUP2-101398	9812684

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

- Laboratory method performance: All quality control criteria for method performance must be met

for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812677 - EA9812680, EA9812684)

Sample Chronology: Five samples and associated quality control were analyzed on 25 - 26 October 1998 for the project specified analyte list by USEPA SW-846, Methods 5030A/8260B using a 25 ml purge volume. All holding times were met.

The batch MS/MSD was performed on another client's sample. All data associated with these QC analyses have been included in this report.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

VOLATILES by GC/MS - WATER (EA9812677, EA9812678, EA9812681 - EA9812683)

Sample Chronology: Five samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 27 October and 12 - 13 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses. All reanalyses and dilutions were performed outside the method holding time.

Sample 30BR-101398 was analyzed at 5000X dilution in order to bring the concentrations of target analytes within the instrument calibration range. Sample 38BR-101398 was analyzed at 2000X dilution. Sample BRP1-101398 was analyzed at both a 10X and a 50X dilution.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS, VL810271, had the recovery of vinyl chloride (43%) below the lower QC limit

of 60%. The batch LCS, VL811129, had the recovery of vinyl chloride (45%) below the lower QC limit of 60%.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- the surrogate recoveries of bromofluorobenzene (BFB) in sample BRP1-101398 (71%), as well as the MS/MSD performed on this sample (71%/71%), were below the lower QC limit of 80%. The surrogate recovery of (BFB) in sample 31BR-100898 (75%) was below the lower QC limit. The surrogate recoveries of (BFB) in sample 07BR-100898 (64%), as well as the MS/MSD performed on this sample (71%/72%), were below the lower QC limit. The dilution of sample BRP1-101398 had the surrogate recovery of BFB (69%) below the lower QC limit.

- the batch MS/MSD, performed on sample BRP1-101398, had the recoveries of vinyl chloride (20%/0%) below the lower QC limit of 60%. The batch MS/MSD, performed on sample 07BR-100898, had the recoveries of vinyl chloride (48%/48%) below the lower QC limit of 60% and the recoveries of carbon tetrachloride (156%/156%), 1,2-dichloropropane (148%/144%), trichloroethene (149%/145%) and benzene (152%/152%) above the upper QC limit of 140%.

- the batch analyzed on 12 - 13 November 1998 was inadvertently double spiked with internal standard solution. All sample result have been adjusted to reflect the appropriate amount of internal standard added to the samples.

ANIONS - WATER (EA9812678 - EA9812684)

Sample Chronology: Seven aqueous samples and associated quality control were analyzed on 14 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Samples 33BR-101398, 32S-101398, BRP1-101398, and DUP2-101398 were reanalyzed at two times (2X) dilutions; and samples 30BR-101398 and 38BR-101398 were reanalyzed at five times (5X) dilutions in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812678-EA9812684)

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981689**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **4 December 1998**

Sample Chronology: Seven samples were prepared on 9 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 11-12 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812678-EA9812684)

Sample Chronology: Seven samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Ammonia, Diss	350.1	9 November 1998	10 November 1998
TDS	160.1	NA	16 October 1998
DOC	415.1	NA	30 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh December 4, 1998
Michael J. Walsh, Laboratory Project Manager

010004

L13900/98081

Company Name: EA-NJ	Project Manager or Contact: STEVE FELDMANN
Project No. 29600.43	Phone: 908-665-2440
Dept.: 2131 Task: 7216	Project Name: NAVY, TRENTON
Sample Storage Location: F12/22/VOA	ATO Number: 7085
Page 1 of 1	Report #: 98/1689

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Report Deliverables: W/ 40 BACK-UP
1 2 (3) 4 (D) E
EDD (Yes)/No D-BASE / EXCEL SUMMARY TABLES INDEED MODIFICATIONS
DUE TO CLIENT: 30 DAY HARD COPY

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC+10 CLP OLO 02.0	VOC+10 8260	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0	EA Labs Accession Number	Remarks
10/13/98	—	X		TRIPBLANK	6	X	X						9812677	LPM: DAVID BRENNAN/NJ
10/13/98	1615	X		FB7-101398	10	X	X	X	X	X	X	X	9812678	
10/13/98	1035	X		33BR-101398	7		X	X	X	X	X	X	9812679	VOC+10 CLP - LOW
10/13/98	1200	X		325-101398	17		X	X	X	X	X	X	9812680	CONCENTRATIONS
* 10/13/98	1143	X		30BR-101398	7	X		X	X	X	X	X	9812681	
* 10/13/98	1602	X		38BR-101398	7	X		X	X	X	X	X	9812682	ALL PARAMETERS
* 10/13/98	1407	X		BRP1-101398	7	X		X	X	X	X	X	9812683	EXCEPT VOC + TDS
10/13/98	—	X		DUP2-101398	7		X	X	X	X	X	X	9812684	HAVE BEEN FILTERED
~~10/13/98~~	~~—~~	X		~~050R-101398~~ (Reject) 10/13/98									—	
														ANY QUESTIONS, CALL STEVE FELDMANN
				Dissolved inorganic anions are: Sulfate, chloride, nitrate										
				Dissolved metals: Ca, Mg, K, Na, Fe, Mn, Ba										* HISTORICALLY WELLS W/ HIGH CONCENTRATIONS VOC 30OR, 38OR, ORP-1
														L14837
														Report DOC to MDLs (0.2 mg/L)

00003978

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A. Harwood	10/13/98 1602	Ronald A. Harwood	10/13/98 1800		
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
			10/14/98 10:00	185281022 3	Fed Ex Puro. UPS

Cooler Temp 2.4 C pH: ☑ Yes ☐ No Comments: Custody Seals Intact ☑ Yes ☐ No

Hand Carried
Other: 185281022 3

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

C00001

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

December 8, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton Navy Site 1 FFS (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of nine water samples collected for the NAWC Trenton Navy project on 14 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981698. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981698

December 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981698**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **8 December 1998**

This report contains the results of the analysis of nine water samples collected on 14 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 15 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
TRIP BLANK	9812752
FB8-101498	9812753
50BR-101498	9812754
20BR-101498	9812755
16BR-101498	9812756
5BR-101498	9812757
DUP4-101498	9812758
36BR-101498	9812759
45BR-101498	9812760
DUP-3-101498	9812761

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981698**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **8 December 1998**

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812752 - EA9812761)

Sample Chronology: Ten samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 28 and 31 October and 12 - 13 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses with the exception of DUP-3-101498 which was analyzed 3 days outside of method holding times due to a computer failure. All reanalyses and dilutions were performed outside the method holding time.

The batch MS/MSDs, analyzed on 31 October and 12 and 13 November 1998, were performed on other client's samples. All data associated with these QC analyses have been included in this report. However, recoveries for these QC analyses have not been evaluated since they are not associated with the samples in this report.

Sample 16BR-101498 required a 20X dilution in order to bring the concentrations of target analytes within the instrument calibration range. Sample DUP-3-101498 required 200X dilution. Sample 36BR-101498 was analyzed at 10000X dilution. Sample 20BR-101498 was analyzed at both a 50X and a 1000X dilution. Sample 45BR-101498 was analyzed at both a 200X dilution and a 1000X dilution.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS, VL810281, had the recovery of carbon tetrachloride (141%) above the upper QC limit of 140%. The batch LCS, VL811031, had the recoveries of carbon tetrachloride (173%) and 1,2-dichloropropane (151%) above the upper QC limit of 140%. The batch LCS, VL811129, had the recovery of vinyl chloride (46%) below the lower QC limit of 60%. These high/low recoveries may be indicative of a method bias for these particular analytes.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981698**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **8 December 1998**

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- the surrogate recoveries of bromofluorobenzene (BFB) in sample BRP1-101398 (71%), as well as the MS/MSD performed on this sample (71%/71%), were below the lower QC limit of 80%. The surrogate recovery of (BFB) in sample 31BR-100898 (75%) was below the lower QC limit. The surrogate recoveries of (BFB) in sample 07BR-100898 (64%), as well as the MS/MSD performed on this sample (71%/72%), were below the lower QC limit. The dilution of sample BRP1-101398 had the surrogate recovery of BFB (69%) below the lower QC limit.

- the batch MS, performed on sample 45BR-101498, had the recoveries of carbon tetrachloride (149%), 1,2-dichloropropane (146%) and benzene (162%) above the upper QC limit of 140%. This MS also had the recovery of trichloroethene (0%) below the lower QC limit of 60%. The individual MSD had the recovery of benzene (156%).

- the batch analyzed on 12 - 13 November 1998 was inadvertently double spiked with internal standard solution. All sample result have been adjusted to reflect the appropriate amount of internal standard added to the samples.

ANIONS - WATER (EA9812753 - EA9812761)

Sample Chronology: Nine aqueous samples and associated quality control were analyzed on 15 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Samples 50BR-101498, 16BR-101498, DUP4-101498, 36BR-101498, 45BR-101498, and DUP-3-101498 were reanalyzed at two times (2X) dilutions; and samples 20BR-101498 and 5BR-101498 were reanalyzed at five times (5X) dilutions in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812753-EA9812561)

Sample Chronology: Nine samples were prepared on 10 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 11-12 November 1998.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981698**
Laboratory Project Manager:**Michael J. Walsh**
Report Date: **8 December 1998**

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812753-EA9812761)

Sample Chronology: Nine samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Ammonia, Diss	350.1	11 November 1998	11 November 1998
TDS	160.1	NA	16 October 1998
DOC	415.1	NA	30 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met with the following exception:

- The dissolved ammonia *MS/MSD recoveries (50%, 50%)* were below the 75-125% control limits. This may bias the sample results low.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh December 8, 1998
Michael J. Walsh, Laboratory Project Manager

L14822 / 98167

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA-NJ	Project Manager or Contact: STEVE FELDMANN Phone: 908-665-2440
Project No. 29600.43 Dept.: 2131 Task: 7216	Project Name: NAVY, TRENTON
Sample Storage Location: K6/VOA/23	ATO Number: 7085
Page 1 of 1	Report #: 98/698

Report Deliverables: (2) / 4D BACK-UP
1 2 (3) 4 (D) E
EDD: (Yes)/No NJDEP MODIFICATIONS D-BASE/EXCEL SUMMARY
DUE TO CLIENT: 30 DAY HARDCOPY

Parameters/Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters (RLM/10/14/98)	No. of Containers	VOC +10 CLP VCC 2.0	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0	EA Labs Accession Number	Remarks
10/14/98	—	X		TRIPBLANK	3	X						9812752	LPM: DAVE BRENNAN
10/14/98	1630	X		FB8-101498	7	X	X	X	X	X	X	9812753	L14839
10/14/98	0954	X		50BR-101498	17	X	X	X	X	X	X	9812754	VOC +10 CLP-LOW
X 10/14/98	1055	X		20BR-101498	7	X	X	X	X	X	X	9812755	CONCENTRATIONS
10/14/98	1330	X		16BR-101498	7	X	X	X	X	X	X	9812756	
10/14/98	1307	X		(RLM) 5BR-101498	7	X	X	X	X	X	X	9812757	ALL PARAMETERS
10/14/98	—	X		DUP4-101498	7	X	X	X	X	X	X	9812758	EXCEPT VOC + TDS
* 10/14/98	1450	X		36BR-101498	7	X	X	X	X	X	X	9812759	HAVE BEEN FILTERED
10/14/98	1600	X		45OR-101498	17	X	X	X	X	X	X	9812760	
~~10/14/98~~	~~—~~	~~X~~		~~DUP5~~									ANY QUESTIONS CALL
10/14/98	—	X		DUP-3-101498	7	X	X	X	X	X	X	9812761	STEVE FELDMANN
													* RUN MS/MSD ON
													50BR-101498 &
				Dissolved Inorganics = Sulfate, Chloride, Nitrate									45BR-101498
				Dissolved Metals = Ca, Mg, K, Na, Fe, Ba								11B	
												22A	* HISTORICALLY HIGH
												11C	CONCENTRATIONS OF
												42VOAS	VOC 20BR/36BR
													Report DOC to MDL (0.2mg/L)

COC0003988

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A Harrod	10/14/98 1630	Ronald A Harrod	10/15/98 1800		
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
			10/15/98 10:00	185281741.	Fed Ex. Pdro. UPS

Cooler Temp. 2.5 C pH: (Yes) No Comments: Custody Seals Intact (Yes) No

Hand Carried

Other:

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

WHITE—EA Laboratories YELLOW—EA Laboratories PINK—Project Manager Shaded areas for Lab Use

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 25, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of nine water samples collected for the NAWC Trenton project on 15 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981705. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981705

November 1998

1. NARRATIVE

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981705**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **25 November 1998**

This report contains the results of the analysis of nine water samples collected on 15 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The samples and one trip blank arrived intact by Federal Express at EA Laboratories on 16 October 1998. Upon receipt, the samples and blank were inspected and compared with the chain-of-custody record. The samples and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
35BR-101598	9812819
ST27-101598	9812820
ST26-101598	9812821
OF25-101598	9812822
OF24-101598	9812823
OF22-101598	9812824
DUP5-101598	9812825
OF23-101598	9812826
FD9-101598	9812827
TRIP BLANK	9812828

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in

this section.

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812819 - EA9812828)

Sample Chronology: Ten samples and associated quality control were analyzed on 30 October and 9 November 1998 for the project specified analyte list by USEPA SW-846, Methods 5030A/8260B using a 25 ml purge volume. All samples were analyzed one day outside of method holding times. All dilutions were analyzed ten days outside of method holding times.

The batch MS/MSD, analyzed on 9 November 1998, was performed on another client's sample. All data associated with these QC analyses have been included in this report.

Samples OF22-101598 and DUP5-101598 required a 5X dilution in order to bring the concentrations of target analytes within the instrument calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

ANIONS - WATER (EA9812819, EA9812827)

Sample Chronology: Two aqueous samples and associated quality control were analyzed on 16 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported

samples.

Sample Performance: All quality control criteria were met for the reported samples.

METALS - WATER (EA9812819,EA9812827)

Sample Chronology: Two samples were prepared on 10 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 11-12 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples.

Sample Performance: All quality control criteria were met for the reported samples.

GENERAL CHEMISTRY - WATER (EA9812819,EA9812827)

Sample Chronology:Two samples were analyzed for the following USEPA methods. All holding times were met.

Parameter	Method#	Prep Date	Analysis Date
Ammonia, Diss	350.1	9 November 1998	10 November 1998
TDS	160.1	NA	19 October 1998
Org. Carbon, Diss	415.1	NA	29 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981705**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **25 November 1998**

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reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh November 25, 1998
Michael J. Walsh, Laboratory Project Manager

010004

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Company Name: EA-NJ

Project Manager or Contact: (RAW) ~~24600.43~~ STEVE FELDMANN

Phone: ~~908-665-2440~~

Project No. 24600.43

Project Name: NAVY, TRENTON

Dept.: 2131 Task: 7216

Sample Storage Location: E11/VOA/23

ATO Number: 7085

Page of

Report #: 981705

Report Deliverables: NJ YD BACK-UP
1 2 (3) 4 (D) E
NJDEP MODS.

EDD: (Yes)/No D-BASE/EXCEL SUMMARY

DUE TO CLIENT: 30 DAY TAT

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC + 10 8260	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0	EA Labs Accession Number	Remarks
10/5/98	1145	X		35BR-101598	7	X	X	X	X	X	X	9812819	LPM: DAVID BRENNAN
10/5/98	0935	X		ST27-101598	3	X						9812820	MW/DBRENNAN -
10/5/98	1115	X		ST26-101598	3	X						9812821	VOC+10 LOW
10/5/98	1150	X		OF25-101598	3	X						9812822	CONC.
10/5/98	1203	X		OF24-101598	3	X						9812823	
10/5/98	1215	X		OF22-101598	3	X						9812824	ALL PARAMETERS
10/5/98	—	X		DUP5-101598	3	X						9812825	EXCEPT VOCs + TDS
10/5/98	1230	X		OF23-101598	3	X						9812826	HAVE BEEN FIELD
10/5/98	1510	X		FD9-101598	7	X	X	X	X	X	X	9812827	FILTERED
10/5/98	—	X		TRIPBLANK	3	X						9812828	
												—	ANY QUESTIONS, CALL
													STEVE FELDMANN
													L14847
				Dissolved Inorganics = Sulfate, Chloride, Nitrate									
				Dissolved Metals = Ca, Mg, K, Na, Fe, Ba									2 A'
													2 B'
													2 A' IL
													2 B'
													30 VOAs

QC 0000397

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Ronald A Harwood	10/5/98 1510	Ronald A Harwood	10/5/98 1600		
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
			10/6/98 10:45	185281040	Fed Ex. Puro. UPS
Cooler Temp. 4° C pH: (X) Yes ( ) No Comments:			Custody Seals Intact (X) Yes ( ) No		Hand Carried
					Other: 185281040

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

EA Laboratories

19 Loveton Circle
Sparks, MD 21152
Telephone: 410-771-4920
Fax: 410-771-4407

November 29, 1998

Mr. Steve Feldmann
EA Engineering, Science, and Technology, Inc.
Two Oak Way
Berkeley Heights, NJ 07922

Re: NAWC Trenton (29600.43)

Dear Mr. Feldmann:

Enclosed is our report on the analysis of one water sample collected for the NAWC Trenton project on 16 October 1998. The EDDs will follow. The invoice is included.

Please contact me if you have any questions or require further information and refer to report 981710. Unless other arrangements are made, we reserve the right to dispose of your samples sixty (60) days from the date of this letter. We will retain the raw data for seven years from this date.

Sincerely,

Michael J. Walsh
Laboratory Project Manager

enclosure

LABORATORY DATA REPORT

Prepared for:

EA Engineering, Science, and Technology, Inc.
NAWC Trenton Navy

Prepared by:

EA Laboratories
19 Loveton Circle
Sparks, MD 21152

Report 981710

November 1998

1. NARRATIVE

010000

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981710**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **29 November 1998**

This report contains the results of the analysis of one water sample collected on 16 October 1998 in support of the referenced project.

SAMPLE RECEIPT

The sample and one trip blank arrived intact by Federal Express at EA Laboratories on 17 October 1998. Upon receipt, the sample and blank were inspected and compared with the chain-of-custody record. The sample and blank were then logged into the laboratory computer system with assigned laboratory accession numbers and released for analysis.

Client Sample Designation	EA Lab Number
WD-101698	9812856
TRIPBLANK	9812857

Following this narrative section is list of analytical methods (Table 1), glossaries of data qualifiers (Tables 2 and 3), and the original chain-of-custody record. Analytical results and quality control information are summarized in the appended data package which has been formatted to be consistent with the deliverable requirements of this project.

QUALITY CONTROL

The following sections are ordered as the data appears in this report. They contain observations made during sample analysis, summarize the results of quality control measurements, and address the impact on data usability based upon project Data Quality Objectives. For each fractional analysis the narrative includes:

- Sample chronology: This section summarizes the sample history by fraction including the sample preparation method and date, analytical method, and analysis date. Anything unusual about the samples, digestates, or extracts is identified. Holding time compliance is evaluated in this section.

- Laboratory method performance: All quality control criteria for method performance must be met for all target analytes for data to be reported. These criteria generally apply to instrument tune, calibration, method blanks, and Laboratory Control Samples (LCS). In some instances where method criteria fail, useable data can be obtained and are reported with client approval. The narrative will then include a thorough discussion of the impact on data quality.

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981710**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **29 November 1998**

- Sample performance: Quality control field samples are analyzed to determine any measurement bias due to the sample matrix based on evaluation of matrix spikes (MS), matrix spike duplicates (MSD), and laboratory duplicates (D). If acceptance criteria are not met, matrix interferences are confirmed either by reanalysis or by inspection of the LCS results to verify that laboratory method performance is in control. Data are reported with appropriate qualifiers or discussion.

VOLATILES by GC/MS - WATER (EA9812856, EA9812857)

Sample Chronology: Two samples and associated quality control were analyzed following the procedures specified in the CLP Statement of Work OLC02.1 on 30 October and 13 - 14 November 1998 for the Target Compound List (TCL) and library searches (TICs) using a 25mL purge volume. All holding times were met for all initial analyses. All dilutions were performed outside the method holding times.

Sample WD-101698 required a 200X dilution in order to bring the concentrations of target analytes within the instrument calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported samples with the following exceptions;

- the batch LCS, VL811139, had the recovery of vinyl chloride (43%) below the lower QC limit of 40%. This low recovery may be indicative of a negative method bias for this target analyte.

Sample Performance: All quality control criteria were met for the reported samples with the following exceptions;

- the diluted analysis of sample WD-101698 (as well as the MS performed on this sample) had the surrogate recoveries of BFB below the lower QC limit of 80%. These low recoveries may be indicative of a negative bias for these samples.

- the batch MS, performed on sample WD-101698, had the recoveries of vinyl chloride (20%) and trichloroethene (0%) below the lower QC limit of 60% (the MSD recovery for trichloroethene was also 0%). These low recoveries appear to have been influenced by the high native concentrations of these analytes in the sample. The batch MS/MSD, performed on the dilution of WD-101698, had 14 out 24 recoveries below the lower QC limit.

- the batch analyzed on 13 November 1998 was inadvertently double spiked with internal standard

solution. All sample result have been adjusted to reflect the appropriate amount of internal standard added to the samples.

ANIONS - WATER (EA9812856)

Sample Chronology: One aqueous sample and associated quality control were analyzed on 17 October 1998 by USEPA Method 300.0 for the anions chloride, nitrate, and sulfate. All holding times were met.

- Sample WD-101698 was reanalyzed at a ten times (10X) dilution in order to bring the concentrations of target anions within calibration range.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported sample.

Sample Performance: All quality control criteria were met for the reported sample with the following exception:

- The matrix spike duplicate (MSD) performed on sample WD-101698 had the recovery of sulfate ion below the lower QC limit of 75% at 65%, and the relative percent difference (RPD) between the recovered concentrations of sulfate in the matrix spike and MSD was above the QC limit of 20% at 26%. The high recovery/RPD are based on estimated values (concentrations above the calibration range) for sulfate; data usability is not affected.

METALS - WATER (EA9812856)

Sample Chronology: One sample was prepared on 10 November 1998 and analyzed for dissolved barium, calcium, iron, magnesium, potassium, and sodium according to EPA method 200.7 on 11-12 November 1998.

Laboratory Method Performance: All laboratory method performance criteria were met for the reported sample.

Sample Performance: All quality control criteria were met for the reported sample.

GENERAL CHEMISTRY - WATER (EA9812856)

Sample Chronology: One sample was analyzed for the following USEPA methods. All holding times

EA Laboratories
ANALYTICAL NARRATIVE

Client: **EA Eng., Sci., & Tech., Inc.**
Site: **NAWC Trenton Navy Site 1 FFS**
Project number: **29600.43**

EA Laboratories Report: **981710**
Laboratory Project Manager: **Michael J. Walsh**
Report Date: **29 November 1998**

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were met.

Parameter	Method#	Prep Date	Analysis Date
Ammonia, Diss	350.1	6 November 1998	10 November 1998
TDS	160.1	NA	19 October 1998
DOC	415.1	NA	29 October 1998

Laboratory Method Performance: All laboratory method performance criteria were met.

Sample Performance: All quality control criteria were met.

CERTIFICATION OF RESULTS

The Laboratory certifies that this report meets the project requirements for analytical data as stated in the Analytical Task Order (ATO) and the chain-of-custody. In addition, the Laboratory certifies that the data as reported meet the Data Quality Objectives for precision, accuracy, and completeness specified for this project or as stated in EA Laboratories Quality Assurance program for other than the conditions detailed above. It is recommended by the Laboratory that this analytical report should only be reproduced in its entirety. EA Laboratories is not responsible for any assumptions of data quality if partial packages are used to interpret data. Release of the data contained in this report has been authorized by the appropriate Laboratory Manager as verified by the following signature.

Michael J. Walsh November 29, 1998
Michael J. Walsh, Laboratory Project Manager

010004

L14851

Company Name: EA-NJ	Project Manager or Contact: STEVE FELDMANN Phone: 908-665-2440
Project No. 7960.43 Dept.: 2131 Task: 7216	Project Name: NAVY, TRENTON
Sample Storage Location: VOA/Z4/K8	ATO Number: 7085
Page 1 of 1	Report #: 981710

Parameters/Method Numbers for Analysis

Date	Time	Water	Soil	Sample Identification 19 Characters	No. of Containers	VOC+10 CLP CW020	TDS BY 160.1	DOC BY 415.1	DISSOLVED AMMONIA BY 350.1	DISSOLVED METALS BY 200.7	INORGANIC ANIONS BY 300.0
* 10/6/98	1030	X		WD-101698	7	X	X	X	X	X	X
10/6/98	—	X		TRIPOLANK	3	X					

Chain of Custody Record

EA Laboratories
19 Loveton Circle
Sparks, MD 21152
Telephone: (410) 771-4920
Fax: (410) 771-4407

Report Deliverables: w/4D BACK-UP
1 2 (3) 4 (5) E NJDEP Mod. Lab
EDD: (Yes)/No DBASE/EXCEL
DUE TO CLIENT: 30-DAY

EA Labs Accession Number	Remarks
	Due 11/17/98 EDDs due 11/30/98
9812856	LPM: DAVE BRENNAN
9812857	
	VOC+10 BY CLP
	LOW CONCENTRATIONS
	ALL PARAMETERS
	EXCEPT VOC & TDS
	HAVE BEEN FIELD
	FILTERED
	* WD - HISTORICALLY
	MOD. CONCENTRATIONS
	FOR VOC
	WD-101698
	L14851
	6 VOA, 1C, 1B, 2A
	COC 004005

Samples by: (Signature)	Date/Time	Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Date/Time
Randall C. Harwood	10/11/98 1030	Randall C. Harwood	10/14/98 1600		
Relinquished by: (Signature)	Date/Time	Received by Laboratory: (Signature)	Date/Time	Airbill Number:	Sample Shipped by: (Circle)
		Sarita Corsen	10/7/98 1030	208416957 7	Fed Ex. Puro. UPS

Cooler Temp. 4 C pH: Yes No Comments: Custody Seals Intact Yes No

Hand Carried

Other:

NOTE: Please indicate method number for analyses requested. This will help clarify any questions with laboratory techniques.

[redacted]—Laboratory [redacted] YE[redacted]W—[redacted]boratory [redacted] [redacted]—Project Manager [redacted] [redacted] Shaded Areas for Lab Use Only

10/2020